

Anions Technical Review Checklist (TRC)

Fluoride (F) ☒ Chloride (Cl) ☒ Nitrite (NO₂) ☐ Bromide (Br) ☒ Nitrate (NO₃) ☐ Phosphate (PO₄) ☐ Sulfate (SO₄) ☒ Full Anions ☐
SOP# R3-QA108.110811

For Internal Use Only

Site Name: DIMOCK RESIDENTIAL GROUNDWATER WO#: 1205011

Analyst: RON ALTMAN Date given to Reviewer: 06/07/12

Matrix: ☐ Solid ☐ Aqueous ☐ Other: _____

Program: ☒ Superfund ☐ RCRA ☐ WPD (NPDES) ☐ SDWA ☐ Other: _____

The signature below indicates the following:

- This data meets the needs of the customer according to the request.
- The analysis was performed as per the SOP, or exceptions documented.
- All documentation needed to recreate the analyses has been reviewed.
- Data Review status set to Peer Reviewed in Element.

Peer Reviewer Signature [Signature] Date Accepted 6/8/12

If any data for this case is stored with another case file, give Site Name and WO # NA

Peer Reviewer Completes Section Below:

General:

Raw data is identified with sample IDs; site name, WO#, analyst name, date of analysis.

YES	NO	N/A	Comments
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Quality Control:

(This section contains specific QC criteria taken from Section 9 of the method specific SOP Batch QC Table.)

	YES	NO	N/A	Comments
<u>Ensure that the appropriate method was selected.</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the method identified and analyte name(s) and unit(s) included?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the quantitation limit(s) stated and appropriate for the project DQOs?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<u>Ensure that the cited method was followed.</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are reagent and standard preparations sufficiently described to verify concentrations on logsheets?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is sample preparation documented on logsheets? (preservation checks, distillation, digestion, etc.)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was the instrument calibrated to bracket reported results? (including analytical balance, electrodes, etc.)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are calibration parameters (R ² , slope, intercept) acceptable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are points from the curve omitted following Instrument Calibration Evaluation Policy?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Is the calibration independently verified? (audit or standard from second source)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was mid-level check standard recovery \pm 10 % of TV?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

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	YES	NO	N/A	Comments
Was NQL recovery \pm 40% of TV except \pm 50% for PO ₄ ⁻³ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are the sample #s clearly identified and matched to the assignment sheet?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are sample preparation steps described with sufficient detail to recalculate dilution or concentration factors?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are technical holding times met? (Include time and date of sample collection, preparation and analysis dates are recorded)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<u>Ensure that the raw data is complete and legible.</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are run orders clear?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the raw data package complete, labeled, and legible with date and analyst signature?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<u>Ensure that all appropriate QC was analyzed and checked against acceptance limits.</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are the appropriate measures of precision and accuracy included? (blanks, dups, spikes)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are QC charts up-to-date, outliers flagged and corrective actions documented? Attach copy of limits or note below.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are qualifier codes correctly applied?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Calculations/Report:

	YES	NO	N/A	Comments
Calculations and transcriptions checked.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are equations shown and at least 10% calculations checked?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are appropriate significant figures reported and final reported results circled or otherwise clearly identified?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Manual integration verified and documented?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Element Draft Report reviewed.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do Element results check back to the raw data?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the report free of typographical and grammatical errors and does it follow the current format?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are analyst observations supported by the raw data? (interferences, lab accident, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Analyte	% Recovery Limits	Upper Precision Limits
F ⁻	80.46 - 121.38	RPD = 15
Cl ⁻	85.04 - 112.72	RPD = 10
NO ₂ ⁻	61.64 - 119.96	RPD = 10
Br ⁻	91.89 - 105.27	RPD = 10
NO ₃ ⁻	83.20 - 125.20	RPD = 10
PO ₄ ⁻³	72.30 - 120.24	RPD = 10
SO ₄ ⁻²	86.36-112.52	RPD = 10

Deviations and problems documented.

<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
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Additional Comments by Peer Reviewer:

Analyst Ensures that the Data Case File is Complete and Accurate as per SOP R3QA-066:

- | | |
|--|--|
| <input checked="" type="checkbox"/> Bench sheet or Work Order list | <input checked="" type="checkbox"/> Appropriate TV sheets / Certificates of Analysis |
| <input checked="" type="checkbox"/> Sample Prep logs | <input checked="" type="checkbox"/> Element Peer Review report |
| <input checked="" type="checkbox"/> Instrument run log | <input checked="" type="checkbox"/> Raw data |
| <input checked="" type="checkbox"/> Standard/Reagent Prep log | <input checked="" type="checkbox"/> Data status set to analyzed |

Additional Comments by Analyst on data issues:



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Office of Analytical Services and Quality Assurance
701 Main Road
Fort Meade, Maryland 20755-5350



Report Narrative

6/8/12
AL



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701 Macon Road
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Report Narrative

The EPA Region 3 Laboratory's Quality System is NELAP accredited. The National Environmental Laboratory Accreditation Program (NELAP) is a voluntary environmental laboratory accreditation association of State and Federal agencies.

General Notes:

This report contains results for all requested analyses.

All samples were received intact and at proper temperature.

Where applicable, sample results are qualified based on the highest level concentrations of field QC contamination found in the field, equipment, or trip blanks.

Unless otherwise noted below, all required instrument and method QC was run and was within criteria.

Metals Analysis Note:

Uranium, strontium, lithium, tin and titanium were analyzed as an on-demand analysis.

The detectable sample results for uranium were qualified estimated "J" due to a quality control sample outside of acceptance limits.

The quantitation limit for selenium for sample 1205011-10 was qualified estimated "UJ" due to the matrix spike outside of acceptance limits.

SVOAs Analysis Note:

All samples were extracted by EPA SW-846 Method 3520C followed by analysis using EPA SW-846 Method 8270D. Refer to notes in case file for additional information regarding the analysis.

For this project one additional compound is added to the SVOC analysis; 1-methylnaphthalene. This is a non-routine analysis. All current in-house quality control limits were met.

For all samples, quantitation limits for 2,4-dinitrophenol are rejected qualified "R" due to zero percent recovery in the low-spike quality control check (BS1) and less than 10% recovery in the mid-level spike quality control check (BS2). For all samples 4,6-dinitro-2-methylphenol and pentachlorophenol had less than 10% recovery in the low-spike quality control check (BS1) but within acceptance limits in the mid-level spike quality control check (BS2); therefore, quantitation limits are raised to the mid-level value. In the report, only 21 compounds are reported for blank spike quality control check samples. Quality control information about the additional spiked compounds is available in the case file.

Results for a limited number of compounds found in all samples have been qualified "B" because of contamination found in either the method blank, field blank, or equipment blank.

Glycols by HPLC/MS/MS Note:

Samples were analyzed for diethylene glycol (DiG) (CAS# 111-46-6), triethylene glycol (TriG) (112-27-6), tetraethylene glycol (TeG) (112-60-7), 2-butoxyethanol (2-Bu) (111-76-2) and 2-methoxyethanol (2-Me) (109-86-4) by HPLC/MS/MS (inst id: TQD-LCMSMS) on a Waters Atlantis dC18 3um 2.1 x 150mm column (s/n- 0141301481).

An HPLC/MS/MS method does not currently exist for these analytes. SOP R3QA239 is in preparation. ASTM D 7731-11 and EPA SW-846 Methods 8000C and 8321 were followed for method development and QA/QC limits where applicable. All applicable OASQA On Demand QA/QC protocols were followed. All QC were within criteria.

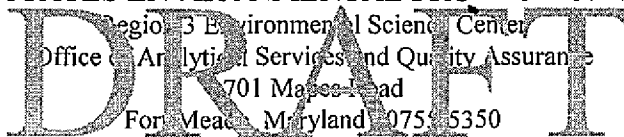
The aqueous samples were injected without extraction onto the HPLC/MS/MS system.

Refer to notes in the case file for additional information regarding the analysis.

Nitrite/Nitrate Analysis Note:

Samples were run as an 'On-Demand' analysis.

Total Nitrogen Analysis Note:



Report Narrative

Samples were run as an 'On-Demand' analysis.

VOA Analysis Note:

Acrylonitrile was analyzed on-demand using CLP equivalent methodology. This analyte does not appear in the data tables or the QC summary and all data for this compound is summarized here. Acrylonitrile was not detected in any of the samples above a quantitation limit of 2 ug/L. A four point curve was analyzed (2, 5, 10 and 20 ug/L). The samples were preserved to a pH<2 with HCl. A low level second source blank spike analyzed at a concentration of 2 ug/L had a recovery of 101%. A mid level second source blank spike was analyzed at a concentration of 5 ug/L with a recovery of 109% and at 10 ug/L with a recovery of 100%.

Matrix spike/matrix spike duplicate samples were prepared with sample 1205011-11 but were not analyzed due to instrument failure.

2-Chloroethylvinyl ether is not included in the analysis. 2-chloroethylvinyl ether breaks down in acidified samples.



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Site Name: Dimock Residential Groundwater

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ANALYTICAL REPORT FOR SAMPLES

Station ID	Laboratory ID	Matrix	Date Sampled	Date Received
FB22	1205011-01	Water	05/22/12 11:58	05/23/12 12:22
HW64	1205011-02	Drinking Water	05/22/12 11:10	05/23/12 12:22
HW64-P	1205011-03	Drinking Water	05/22/12 11:40	05/23/12 12:22
FB23	1205011-08	Water	05/23/12 13:25	05/24/12 11:53
HW63z	1205011-09	Drinking Water	05/23/12 13:10	05/24/12 11:53
HW63	1205011-10	Drinking Water	05/23/12 13:09	05/24/12 11:53
HW62	1205011-11	Drinking Water	05/22/12 15:59	05/24/12 11:53



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Site Name: Dimock Residential Groundwater

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Anions

Analyte	Result	Flags/ Qualifiers	Quantitation Limit	Units	Dilution	Prepared	Analyzed	Method/SOP#
Lab ID:	1205011-01							
Station ID:	FB22							
Sample Matrix:	Water							
Collected:	05/22/2012							
Bromide	U ✓		0.500	mg/L	1	06/04/12	06/04/12 11:14	EPA 300.0/R3QA108
Chloride	U ✓		0.250	mg/L	1	06/04/12	06/04/12 11:14	EPA 300.0/R3QA108
Fluoride	U ✓		0.100	mg/L	1	06/04/12	06/04/12 11:14	EPA 300.0/R3QA108
Sulfate as SO4	U ✓		0.500	mg/L	1	06/04/12	06/04/12 11:14	EPA 300.0/R3QA108

Anions

Analyte	Result	Flags/ Qualifiers	Quantitation Limit	Units	Dilution	Prepared	Analyzed	Method/SOP#
Lab ID:	1205011-02							
Station ID:	HW64							
Sample Matrix:	Drinking Water							
Collected:	05/22/2012							
Bromide	U ✓		0.500	mg/L	1	06/04/12	06/04/12 11:14	EPA 300.0/R3QA108
Chloride	1.32 ✓		0.250	mg/L	1	06/04/12	06/04/12 11:14	EPA 300.0/R3QA108
Fluoride	U ✓		0.100	mg/L	1	06/04/12	06/04/12 11:14	EPA 300.0/R3QA108
Sulfate as SO4	8.03 ✓		0.500	mg/L	1	06/04/12	06/04/12 11:14	EPA 300.0/R3QA108



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Anions

Analyte	Result	Flags/ Qualifiers	Quantitation Limit	Units	Dilution	Prepared	Analyzed	Method/SOP#
Lab ID:	1205011-03							
Station ID:	HW64-P							
Sample Matrix:	Drinking Water							
Collected:	05/22/2012							
Bromide	U ✓		0.500	mg/L	1	06/04/12	06/04/12 11:14	EPA 300.0/R3QA108
Chloride	1.32 ✓		0.250	mg/L	1	06/04/12	06/04/12 11:14	EPA 300.0/R3QA108
Fluoride	U ✓		0.100	mg/L	1	06/04/12	06/04/12 11:14	EPA 300.0/R3QA108
Sulfate as SO ₄	8.04 ✓		0.500	mg/L	1	06/04/12	06/04/12 11:14	EPA 300.0/R3QA108

Anions

Analyte	Result	Flags/ Qualifiers	Quantitation Limit	Units	Dilution	Prepared	Analyzed	Method/SOP#
Lab ID:	1205011-08							
Station ID:	FB23							
Sample Matrix:	Water							
Collected:	05/23/2012							
Bromide	U ✓		0.500	mg/L	1	06/04/12	06/04/12 11:14	EPA 300.0/R3QA108
Chloride	U ✓		0.250	mg/L	1	06/04/12	06/04/12 11:14	EPA 300.0/R3QA108
Fluoride	U ✓		0.100	mg/L	1	06/04/12	06/04/12 11:14	EPA 300.0/R3QA108
Sulfate as SO ₄	U ✓		0.500	mg/L	1	06/04/12	06/04/12 11:14	EPA 300.0/R3QA108



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Anions

Analyte	Result	Flags/ Qualifiers	Quantitation Limit	Units	Dilution	Prepared	Analyzed	Method/SOP#
Lab ID:	1205011-09							
Station ID:	HW63z							
Sample Matrix:	Drinking Water							
Collected:	05/23/2012							
Bromide	U ✓		0.500	mg/L	1	06/04/12	06/04/12 11:14	EPA 300.0/R3QA108
Chloride	11.9 ✓		0.250	mg/L	1	06/04/12	06/04/12 11:14	EPA 300.0/R3QA108
Fluoride	U ✓		0.100	mg/L	1	06/04/12	06/04/12 11:14	EPA 300.0/R3QA108
Sulfate as SO4	13.8 ✓		0.500	mg/L	1	06/04/12	06/04/12 11:14	EPA 300.0/R3QA108

Anions

Analyte	Result	Flags/ Qualifiers	Quantitation Limit	Units	Dilution	Prepared	Analyzed	Method/SOP#
Lab ID:	1205011-10							
Station ID:	HW63							
Sample Matrix:	Drinking Water							
Collected:	05/23/2012							
Bromide	U ✓		0.500	mg/L	1	06/04/12	06/04/12 11:14	EPA 300.0/R3QA108
Chloride	11.9 ✓		0.250	mg/L	1	06/04/12	06/04/12 11:14	EPA 300.0/R3QA108
Fluoride	U ✓		0.100	mg/L	1	06/04/12	06/04/12 11:14	EPA 300.0/R3QA108
Sulfate as SO4	13.8 ✓		0.500	mg/L	1	06/04/12	06/04/12 11:14	EPA 300.0/R3QA108



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Anions

Analyte	Result	Flags/ Qualifiers	Quantitation Limit	Units	Dilution	Prepared	Analyzed	Method/SOP#
Lab ID:	1205011-11							
Station ID:	HW62							
Sample Matrix:	Drinking Water							
Collected:	05/22/2012							
Bromide	U ✓		0.500	mg/L	1	06/04/12	06/04/12 11:14	EPA 300.0/R3QA108
Chloride	28.0 ✓		1.25	mg/L	5	06/04/12	06/04/12 11:14	EPA 300.0/R3QA108
Fluoride	U ✓		0.100	mg/L	1	06/04/12	06/04/12 11:14	EPA 300.0/R3QA108
Sulfate as SO4	10.0 ✓		0.500	mg/L	1	06/04/12	06/04/12 11:14	EPA 300.0/R3QA108



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QC Data
Anions

Analyte	Result	Quantitation Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch BF20702 - Anions Water Prep

Blank (BF20702-BLK1)

Prepared: 06/04/12 11:08 Analyzed: 06/04/12 11:14

Bromide	U ✓	0.500	mg/L
Chloride	U ✓	0.250	"
Fluoride	U ✓	0.100	"
Sulfate as SO4	U ✓	0.500	"

LCS (BF20702-BS1)

Prepared: 06/04/12 11:08 Analyzed: 06/04/12 11:14

Bromide	10.0 ✓	0.500	mg/L	10.000	100 ✓	90-110
Chloride	5.01 ✓	0.250	"	5.0000	100 ✓	90-110
Fluoride	2.01 ✓	0.100	"	2.0000	100 ✓	90-110
Sulfate as SO4	10.1 ✓	0.500	"	10.000	101 ✓	90-110

Duplicate (BF20702-DUP1)

Source: 1205011-11

Prepared: 06/04/12 11:08 Analyzed: 06/04/12 11:14

Bromide	U ✓	0.500	mg/L	U		15
Fluoride	U ✓	0.100	"	U		10
Sulfate as SO4	9.89 ✓	0.500	"	10.0	1	10

Duplicate (BF20702-DUP2)

Source: 1205011-11

Prepared: 06/04/12 11:08 Analyzed: 06/04/12 11:14

Chloride	28.9 ✓	1.25	mg/L	28.0	3	10
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Matrix Spike (BF20702-MS1)

Source: 1205011-11

Prepared: 06/04/12 11:08 Analyzed: 06/04/12 11:14

Bromide	5.02 ✓	0.500	mg/L	5.0000	U	100 ✓	91.9-105.3
Fluoride	0.978 ✓	0.100	"	1.0000	U	98 ✓	80.5-121.4
Sulfate as SO4	14.9 ✓	0.500	"	5.0000	10.0	98 ✓	86.4-112.5

Matrix Spike (BF20702-MS2)

Source: 1205011-11

Prepared: 06/04/12 11:08 Analyzed: 06/04/12 11:14

Chloride	40.9 ✓	1.25	mg/L	12.500 ✓	28.0	103 ✓	85-112.7
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Reference (BF20702-SRM1)

Prepared: 06/04/12 11:08 Analyzed: 06/04/12 11:14

Bromide	10.0 ✓		mg/L	10.000	100 ✓	90-110
Chloride	5.00 ✓		"	5.0000	100 ✓	90-110
Fluoride	1.97 ✓		"	2.0000	99 ✓	90-110
Sulfate as SO4	10.1 ✓		"	10.000	101 ✓	90-110



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Notes and Definitions

%REC Percent Recovery

RPD Relative Percent Difference

U Analyte included in the analysis, but not detected at or above the quantitation limit.

Quantitation Limit: The lowest concentration of an analyte that can be reliably measured within specified limits of precision and accuracy for a specific laboratory analytical method and that takes into account analytical adjustments made during sample preparation and analysis.

REPORTING PROTOCOL FOR SOLID SAMPLE RESULTS: Percent Solids (percent dry wt at 105 degrees C) determinations are routinely performed for most organic and inorganic analyses. Consequently, these samples are analyzed wet and converted to a dry weight result for reporting purposes. If metals and mercury analyses are requested, they are routinely prepared for analyses by an initial drying at 60 degrees C, homogenized prior to digestion, and are analyzed and reported on a dry weight basis. Oil-type samples are analyzed and reported on a wet weight basis for all analyses because of the nature of the sample matrix. Any exceptions to this protocol will be noted in the narrative.



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Items for Project Manager Review

LabNumber	Analysis	Analyte	Exception
	Anions By IC 300.0	(Water)	Special Units: (mg/L.)
1205011-01	Anions By IC 300.0		Status is Analyzed
1205011-02	Anions By IC 300.0		Status is Analyzed
1205011-03	Anions By IC 300.0		Status is Analyzed
1205011-08	Anions By IC 300.0		Status is Analyzed
1205011-09	Anions By IC 300.0		Status is Analyzed
1205011-10	Anions By IC 300.0		Status is Analyzed
1205011-11	Anions By IC 300.0		Status is Analyzed

1205011

U.S. EPA Region 3 - FOR INTERNAL USE ONLY

Client: OSWER - Emergency Response
 Project: DAS R33989
 Final Report Due: 06/15/2012

Project Manager: Cindy Caporale
 Site Name: Dimock Residential Groundwater
 Acct#: 2012T03N303DC6A3TARS00

Report To:

Client Project Manager: Rich Fetzer
 Email: fetzer.richard@epa.gov
 Phone: (610) 861-2087
 Fax:

Project/WO Comments

Unvalidated data = 7 days (refer to
 Special Instructions)
 Validated data = 21 days

Shelf

Analyst
 EPA #3 Shelf 1C
 EPA #3 Shelf 2C
 EPA #3 Shelf 7B
 EPA #3 Shelf 8B
 EPA #5 VOA

Received By: Kevin Martin
 Date Received: 05/23/12 12:22
 Temperature Samples Received at: 3°C
 Custody Seals Yes
 Containers Intact Yes
 COC/Labels Agree Yes
 Preservation Confirmed Yes

Received On Ice Yes
 Radiation Checked Yes

ESAT INFO ONLY

Preliminary Report Due Date _____
 ESAT Due Date _____
 _____ Complete _____ Not Complete
 _____ Need TDF _____ TDF #

Relinquished By: [REDACTED]

Sample# 1205011-01
 Sample Name: FB22
 Sample Type: SAM

Lab\Report Matrix Water\Water
 Date Sampled 05/22/12 11:58

Sample Logged In: 05/23/12 13:19
 Sample Received: 05/23/12 12:22

Anions By IC 300.0

Sampled By: [REDACTED]
 Expires: 06/19/12 11:58
 Analysis Comments: 11 Drinking Water
 Sample Comments:

Received

Sample# 1205011-02
 Sample Name: HW64
 Sample Type: SAM

Lab\Report Matrix Water\Drinking Water
 Date Sampled 05/22/12 11:10

Sample Logged In: 05/23/12 13:19
 Sample Received: 05/23/12 12:22

Anions By IC 300.0

Sampled By: [REDACTED]
 Expires: 06/19/12 11:10
 Analysis Comments: 11 Drinking Water
 Sample Comments:

Received

Sample# 1205011-03
 Sample Name: HW64-P
 Sample Type: SAM

Lab\Report Matrix Water\Drinking Water
 Date Sampled 05/22/12 11:40

Sample Logged In: 05/23/12 13:19
 Sample Received: 05/23/12 12:22

Anions By IC 300.0

Sampled By: [REDACTED]
 Expires: 06/19/12 11:40
 Analysis Comments: 11 Drinking Water
 Sample Comments:

Received

Sample# 1205011-08
Sample Name: FB23
Sample Type: SAM

Lab\Report Matrix Water\Water
Date Sampled 05/23/12 13:25

Sample Logged In: 05/24/12 12:51
Sample Received: 05/24/12 11:53

Anions By IC 300.0

Sampled By: [REDACTED]
Expires: 06/20/12 13:25
Analysis Comments: 11 Drinking Water
Sample Comments:

Received

Sample# 1205011-09
Sample Name: HW63z
Sample Type: SAM

Lab\Report Matrix Water\Drinking Water
Date Sampled 05/23/12 13:10

Sample Logged In: 05/24/12 12:51
Sample Received: 05/24/12 11:53

Anions By IC 300.0

Sampled By: [REDACTED]
Expires: 06/20/12 13:10
Analysis Comments: 11 Drinking Water
Sample Comments:

Received

Sample# 1205011-10
Sample Name: HW63
Sample Type: SAM

Lab\Report Matrix Water\Drinking Water
Date Sampled 05/23/12 13:09

Sample Logged In: 05/24/12 12:51
Sample Received: 05/24/12 11:53

Anions By IC 300.0

Sampled By: [REDACTED]
Expires: 06/20/12 13:09
Analysis Comments: 11 Drinking Water
Sample Comments:

Received

Sample# 1205011-11
Sample Name: HW62
Sample Type: SAM

Lab\Report Matrix Water\Drinking Water
Date Sampled 05/22/12 15:59

Sample Logged In: 05/24/12 12:51
Sample Received: 05/24/12 11:53

Anions By IC 300.0

Sampled By: [REDACTED]
Expires: 06/19/12 15:59
Analysis Comments: 11 Drinking Water
Sample Comments: QC for SVOCs and VOCs

Received

ANIONS
PROGRAM
AND
QUANT METHOD
FILES

Sequence: 04Jun12
Operator: US Environmental Pro

Page 1 of 2
Printed: 6/4/2012 3:35:20 PM

Title: WO1205011 Dimock Residential Groundwater Analyst: Ron Altman EPA Method 300.0 SOP-R3QA108.110811

Datasource: DHMN8QM1_local

Location: SYS1\Import

Timebase: SYS1

#Samples: 27

Created: 6/4/2012 10:40:55 AM by US Environmental Pro
Last Update: 6/4/2012 3:26:43 PM by US Environmental Pro

No.	Name	Type	Pos.	Inj. Vol.	Program	Method	Status
1	Standard 5	Unknown	1	20.0	Anion Dx-500	ANION TEST-new	Finished
2	Standard 1	Standard	2	20.0	Anion Dx-500	ANION TEST-new	Finished
3	Standard 2	Standard	3	20.0	Anion Dx-500	ANION TEST-new	Finished
4	Standard 3	Standard	4	20.0	Anion Dx-500	ANION TEST-new	Finished
5	Standard 4	Standard	5	20.0	Anion Dx-500	ANION TEST-new	Finished
6	Standard 5	Standard	6	20.0	Anion Dx-500	ANION TEST-new	Finished
7	Standard 6	Standard	7	20.0	Anion Dx-500	ANION TEST-new	Finished
8	Custom Anion	Unknown	8	20.0	Anion Dx-500	ANION TEST-new	Finished
9	BLK	Unknown	9	20.0	Anion Dx-500	ANION TEST-new	Finished
10	BS	Unknown	10	20.0	Anion Dx-500	ANION TEST-new	Finished
11	Standard 1-CCV	Unknown	11	20.0	Anion Dx-500	ANION TEST-new	Finished
12	Standard 5-CCV	Unknown	12	20.0	Anion Dx-500	ANION TEST-new	Finished
13	1205011-01	Unknown	13	20.0	Anion Dx-500	ANION TEST-new	Finished
14	1205011-02	Unknown	14	20.0	Anion Dx-500	ANION TEST-new	Finished
15	1205011-03	Unknown	15	20.0	Anion Dx-500	ANION TEST-new	Finished
16	1205011-08	Unknown	16	20.0	Anion Dx-500	ANION TEST-new	Finished
17	1205011-09	Unknown	17	20.0	Anion Dx-500	ANION TEST-new	Finished
18	1205011-10	Unknown	18	20.0	Anion Dx-500	ANION TEST-new	Finished
19	1205011-11	Unknown	19	20.0	Anion Dx-500	ANION TEST-new	Finished
20	1205011-11-DUP	Unknown	20	20.0	Anion Dx-500	ANION TEST-new	Finished
21	1205011-11-MS	Unknown	21	20.0	Anion Dx-500	ANION TEST-new	Finished
22	Standard 5-CCV	Unknown	22	20.0	Anion Dx-500	ANION TEST-new	Finished
23	1205011-11-5x	Unknown	23	20.0	Anion Dx-500	ANION TEST-new	Finished
24	1205011-11-5x-DUP	Unknown	24	20.0	Anion Dx-500	ANION TEST-new	Finished
25	1205011-11-5x-MS	Unknown	25	20.0	Anion Dx-500	ANION TEST-new	Finished
26	Standard 5	Unknown	26	20.0	Anion Dx-500	ANION TEST-new	Finished
27	IBL	Unknown	27	20.0	Anion Dx-500	ANION TEST-new	Finished

Sequence: 04Jun12
Operator: US Environmental Pro

Page 2 of 2
Printed: 6/4/2012 3:35:20 PM

Title: WO1205011 Dimock Residential Groundwater Analyst: Ron Altman EPA Method 300.0 SOP-R3QA108.110811

Datasource: DHMN8QM1_local

Location: SYS1\Import

Timebase: SYS1

#Samples: 27

Created: 6/4/2012 10:40:55 AM by US Environmental Pro

Last Update: 6/4/2012 3:26:43 PM by US Environmental Pro

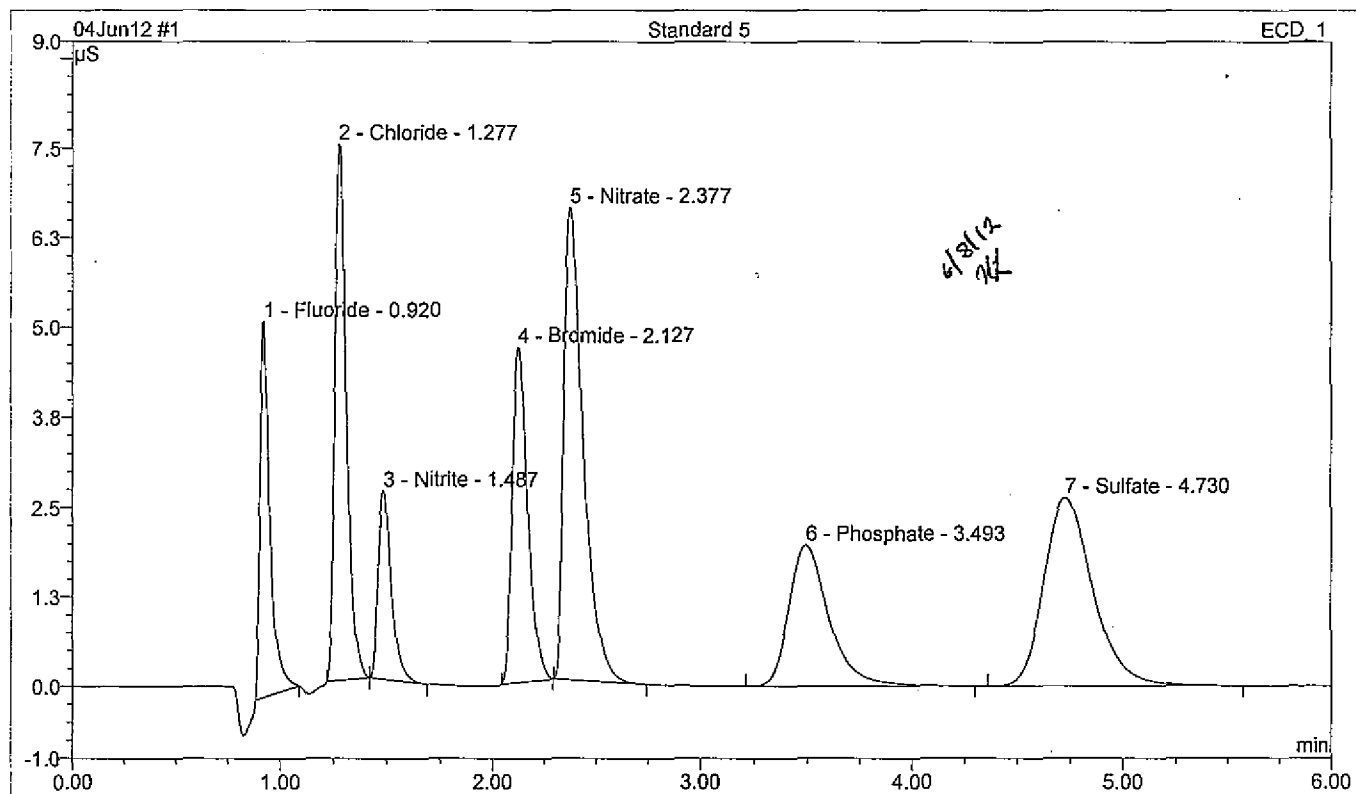
No.	Name	Inj. Date/Time	Weight	Dil. Factor	ISTD Amount	Sample ID	Replicate ID	Comment
1	Standard 5	6/4/2012 10:44:11 AM	1.0000	1.0000	1.0000		01	
2	Standard 1	6/4/2012 10:52:35 AM	1.0000	1.0000	1.0000		01	
3	Standard 2	6/4/2012 11:00:59 AM	1.0000	1.0000	1.0000		02	
4	Standard 3	6/4/2012 11:09:23 AM	1.0000	1.0000	1.0000		03	
5	Standard 4	6/4/2012 11:17:48 AM	1.0000	1.0000	1.0000		04	
6	Standard 5	6/4/2012 11:26:12 AM	1.0000	1.0000	1.0000		05	
7	Standard 6	6/4/2012 11:34:37 AM	1.0000	1.0000	1.0000		06	
8	Custom Anion	6/4/2012 11:43:02 AM	1.0000	1.0000	1.0000		05	
9	BLK	6/4/2012 11:51:26 AM	1.0000	1.0000	1.0000		05	
10	BS	6/4/2012 11:59:50 AM	1.0000	1.0000	1.0000		05	
11	Standard 1-CCV	6/4/2012 12:08:15 PM	1.0000	1.0000	1.0000		05	
12	Standard 5-CCV	6/4/2012 12:16:39 PM	1.0000	1.0000	1.0000		05	
13	1205011-01	6/4/2012 12:25:04 PM	1.0000	1.0000	1.0000		05	
14	1205011-02	6/4/2012 12:33:28 PM	1.0000	1.0000	1.0000		05	
15	1205011-03	6/4/2012 12:41:53 PM	1.0000	1.0000	1.0000		05	
16	1205011-08	6/4/2012 12:50:17 PM	1.0000	1.0000	1.0000		05	
17	1205011-09	6/4/2012 12:58:42 PM	1.0000	1.0000	1.0000		05	
18	1205011-10	6/4/2012 1:07:06 PM	1.0000	1.0000	1.0000		05	
19	1205011-11	6/4/2012 1:15:30 PM	1.0000	1.0000	1.0000		05	
20	1205011-11-DUP	6/4/2012 1:23:55 PM	1.0000	1.0000	1.0000		05	
21	1205011-11-MS	6/4/2012 1:32:20 PM	1.0000	1.0000	1.0000		05	
22	Standard 5-CCV	6/4/2012 1:40:45 PM	1.0000	1.0000	1.0000		05	
23	1205011-11-5x	6/4/2012 2:29:03 PM	1.0000	5.0000	1.0000		05	
24	1205011-11-5x-DUP	6/4/2012 2:37:28 PM	1.0000	5.0000	1.0000		05	
25	1205011-11-5x-MS	6/4/2012 2:45:52 PM	1.0000	5.0000	1.0000		05	
26	Standard 5	6/4/2012 2:54:17 PM	1.0000	1.0000	1.0000		05	
27	IBL	6/4/2012 3:11:54 PM	1.0000	1.0000	1.0000		05	

ANIONS

RAW DATA

1 Standard 5

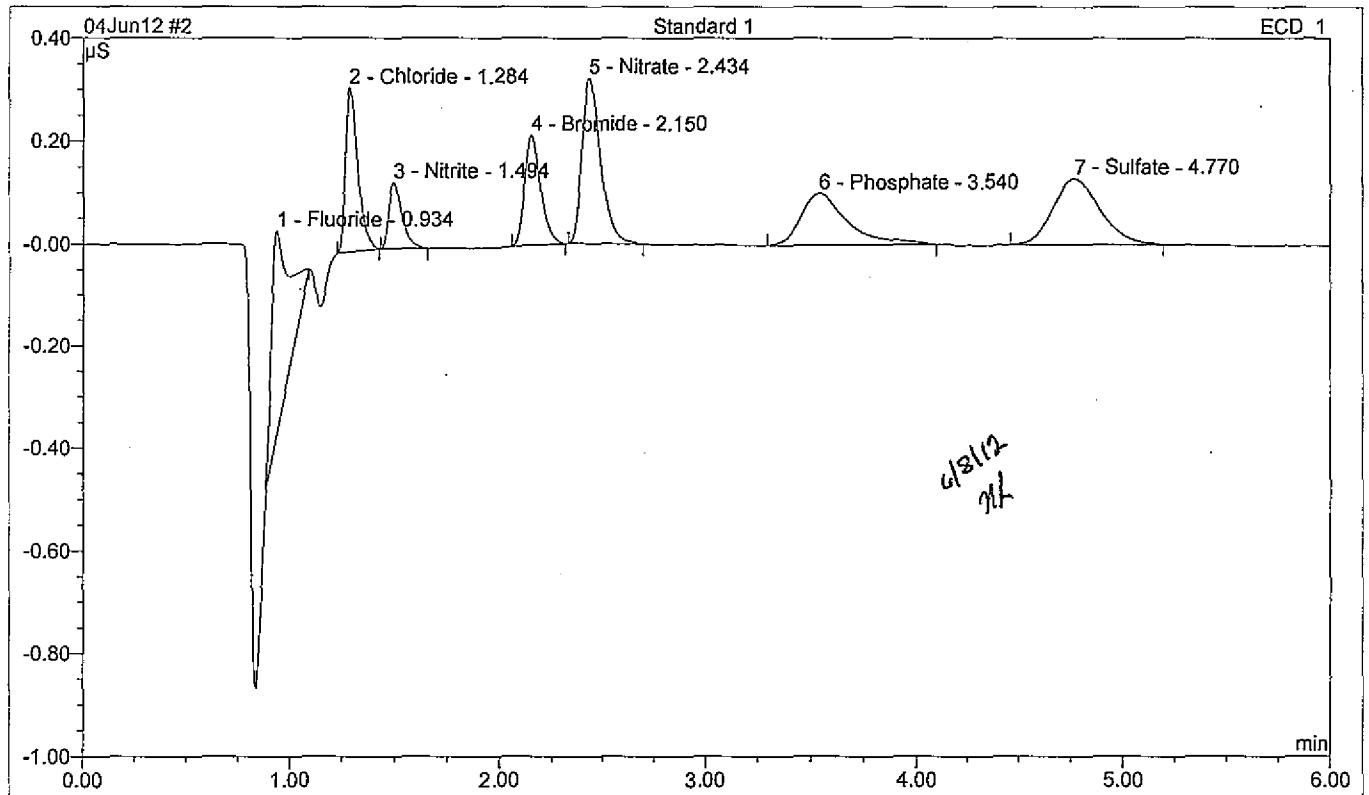
WO1205011	Dimock Residential Groundwater	Suppressor:	SRS
Sample Name:	Standard 5	Injection Volume:	20.0
Vial Number:	1	Channel:	ECD_1
Sample Type:	unknown	Suppressor Current	50 mA
Control Program:	Anion Dx-500	Flow Rate:	2.00
Quantif. Method:	ANION TEST-new	Dilution Factor:	1.0000
Recording Time:	6/4/2012 10:44	Sequence:	04Jun12
Run Time (min):	6.00	Column	AS4A



No.	Ret.Time min	Peak Name	Amount ppm	Area $\mu\text{S} \cdot \text{min}$	Height μS	Reported Value ppm
1	0.92	Fluoride	1.8753	0.28844	5.23945	✓
2	1.28	Chloride	4.9495	0.47167	7.47885	✓
3	1.49	Nitrite	0.9973	0.18829	2.63691	
4	2.13	Bromide	9.9261	0.40626	4.67468	✓
5	2.38	Nitrate	2.9820	0.71273	6.58680	
6	3.49	Phosphate	5.0089	0.43172	1.97272	
7	4.73	Sulfate	9.9633	0.70673	2.63528	✓

2 Standard 1

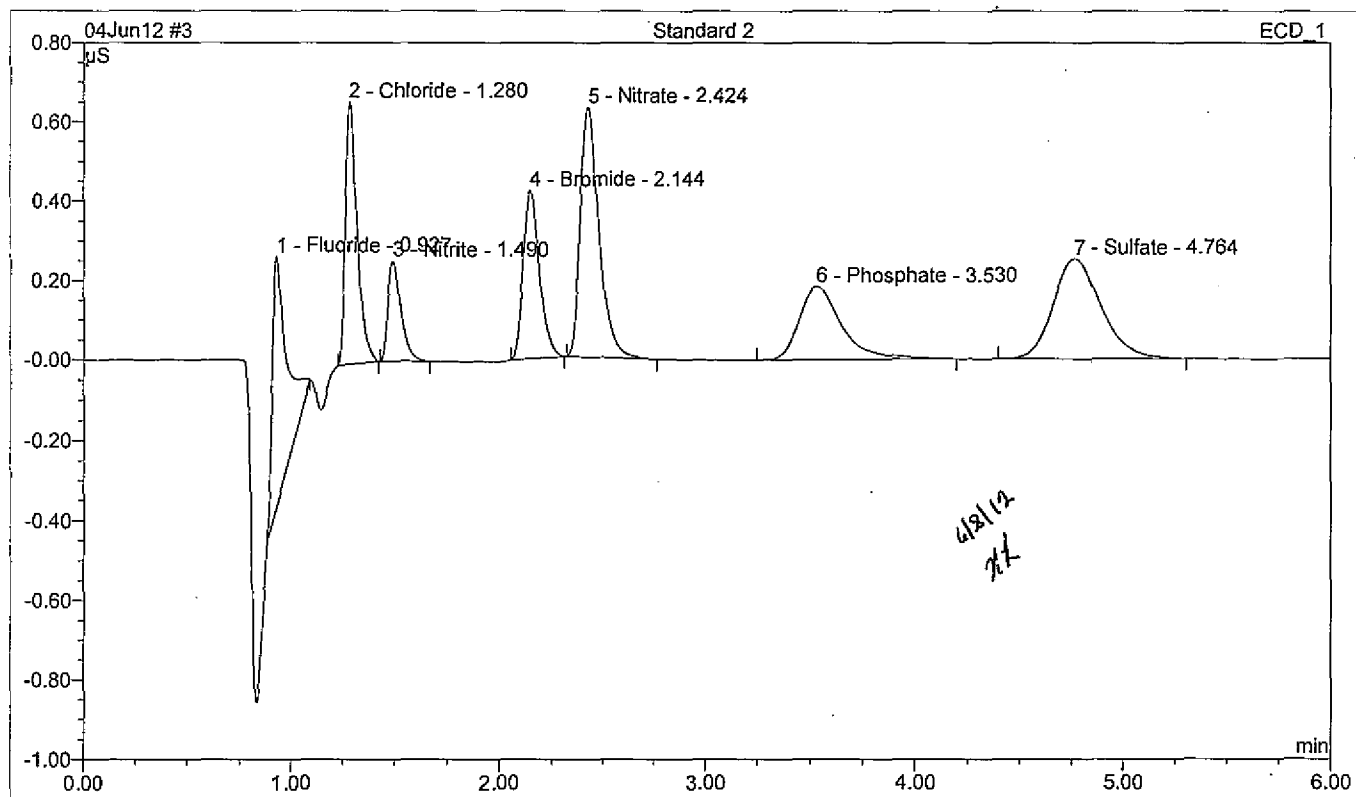
WO1205011	Dimock Residential Groundwater	Suppressor:	SRS
Sample Name:	Standard 1	Injection Volume:	20.0
Vial Number:	2	Channel:	ECD_1
Sample Type:	standard	Suppressor Current	50 mA
Control Program:	Anion Dx-500	Flow Rate:	2.00
Quantif. Method:	ANION TEST-new	Dilution Factor:	1.0000
Recording Time:	6/4/2012 10:52	Sequence:	04Jun12
Run Time (min):	6.00	Column	AS4A



No.	Ret. Time min	Peak Name	Amount ppm	Area $\mu\text{S} \cdot \text{min}$	Height μS	Reported Value ppm
1	0.93	Fluoride	0.1042	0.03763	0.40569	✓
2	1.28	Chloride	0.2411	0.02138	0.31854	✓
3	1.49	Nitrite	0.0534	0.00924	0.12843	
4	2.15	Bromide	0.5293	0.01926	0.21338	✓
5	2.43	Nitrate	0.1617	0.03386	0.32142	
6	3.54	Phosphate	0.2793	0.02544	0.09995	
7	4.77	Sulfate	0.4948	0.03368	0.12802	✓

3 Standard 2

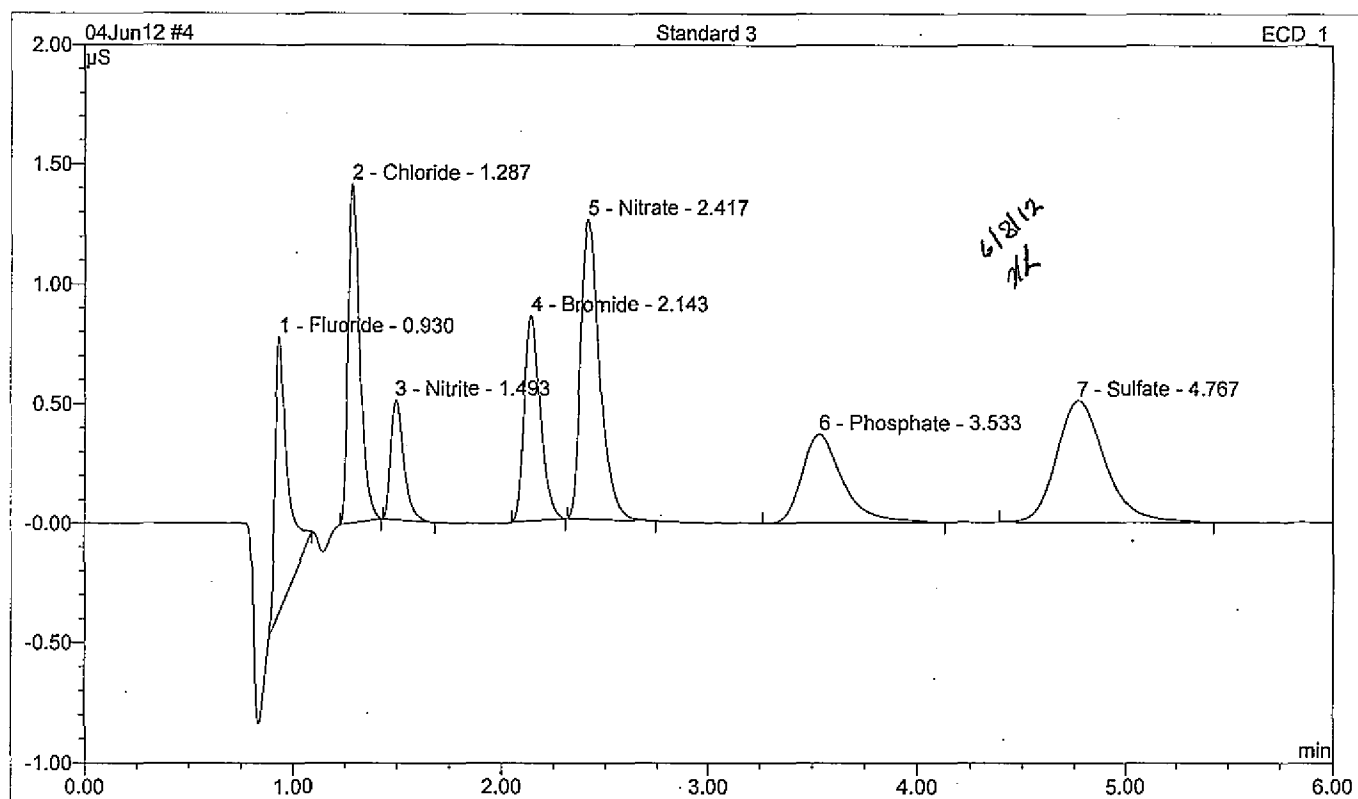
WO1205011	Dimock Residential Groundwater	Suppressor:	SRS
Sample Name:	Standard 2	Injection Volume:	20.0
Vial Number:	3	Channel:	ECD_1
Sample Type:	standard	Suppressor Current	50 mA
Control Program:	Anion Dx-500	Flow Rate:	2.00
Quantif. Method:	ANION TEST-new	Dilution Factor:	1.0000
Recording Time:	6/4/2012 11:00	Sequence:	04Jun12
Run Time (min):	6.00	Column	AS4A



No.	Ret.Time min	Peak Name	Amount ppm	Area $\mu\text{S} \cdot \text{min}$	Height μS	Reported Value ppm
1	0.93	Fluoride	0.1877	0.04912	0.62769	✓
2	1.28	Chloride	0.4865	0.04342	0.66065	✓
3	1.49	Nitrite	0.1010	0.01801	0.25177	
4	2.14	Bromide	1.0078	0.03801	0.42401	✓
5	2.42	Nitrate	0.3058	0.06672	0.63027	
6	3.53	Phosphate	0.4884	0.04267	0.18378	
7	4.76	Sulfate	0.9931	0.06794	0.25255	✓

4 Standard 3

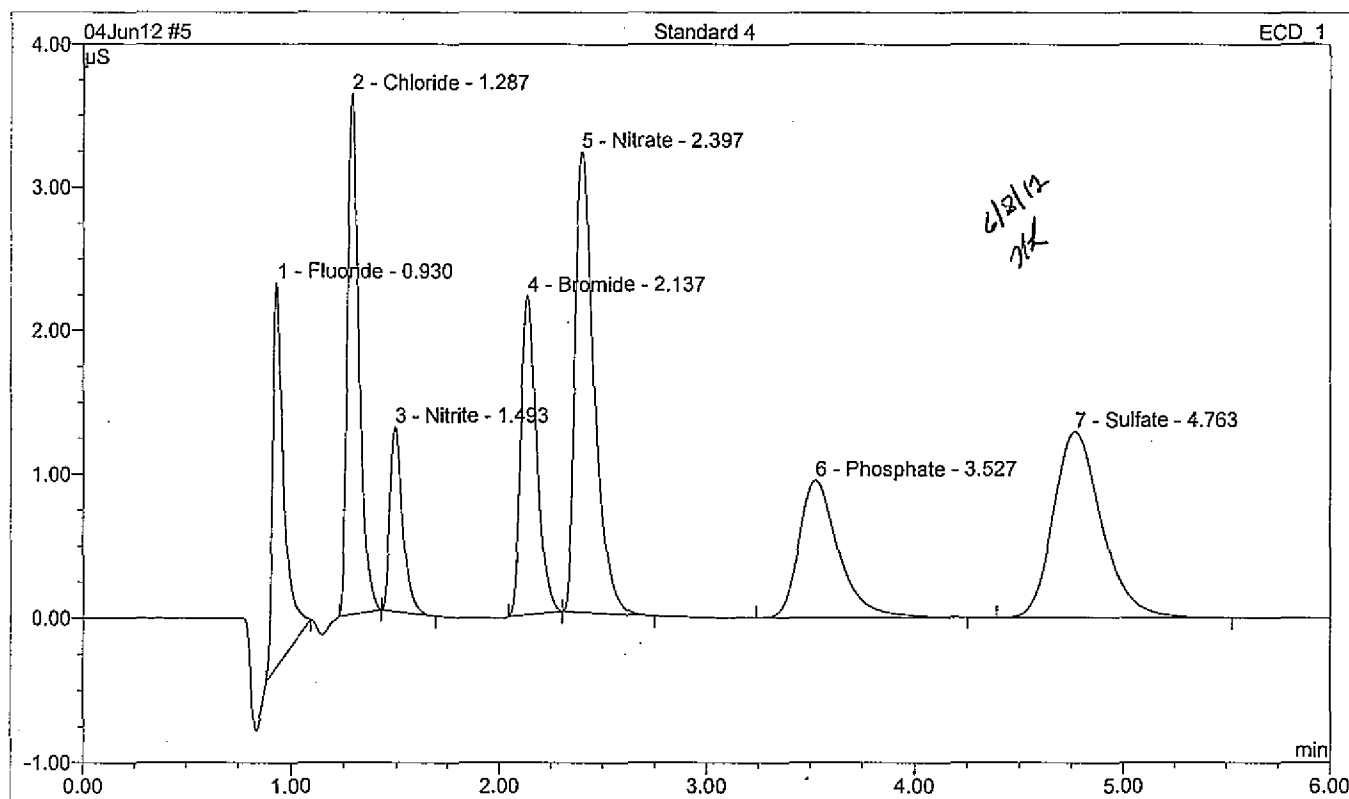
WO1205011	Dimock Residential Groundwater	Suppressor:	SRS
Sample Name:	Standard 3	Injection Volume:	20.0
Vial Number:	4	Channel:	ECD_1
Sample Type:	standard	Suppressor Current	50 mA
Control Program:	Anion Dx-500	Flow Rate:	2.00
Quantif. Method:	ANION TEST-new	Dilution Factor:	1.0000
Recording Time:	6/4/2012 11:09	Sequence:	04Jun12
Run Time (min):	6.00	Column	AS4A



No.	Ret.Time min	Peak Name	Amount ppm	Area $\mu\text{S} \cdot \text{min}$	Height μS	Reported Value ppm
1	0.93	Fluoride	0.4091	0.07976	1.15726	✓
2	1.29	Chloride	1.0172	0.09163	1.41625	✓
3	1.49	Nitrite	0.1978	0.03594	0.50066	
4	2.14	Bromide	1.9866	0.07669	0.85831	✓
5	2.42	Nitrate	0.5898	0.13207	1.25082	
6	3.53	Phosphate	0.9872	0.08405	0.37097	
7	4.77	Sulfate	2.0283	0.13953	0.51073	✓

5 Standard 4

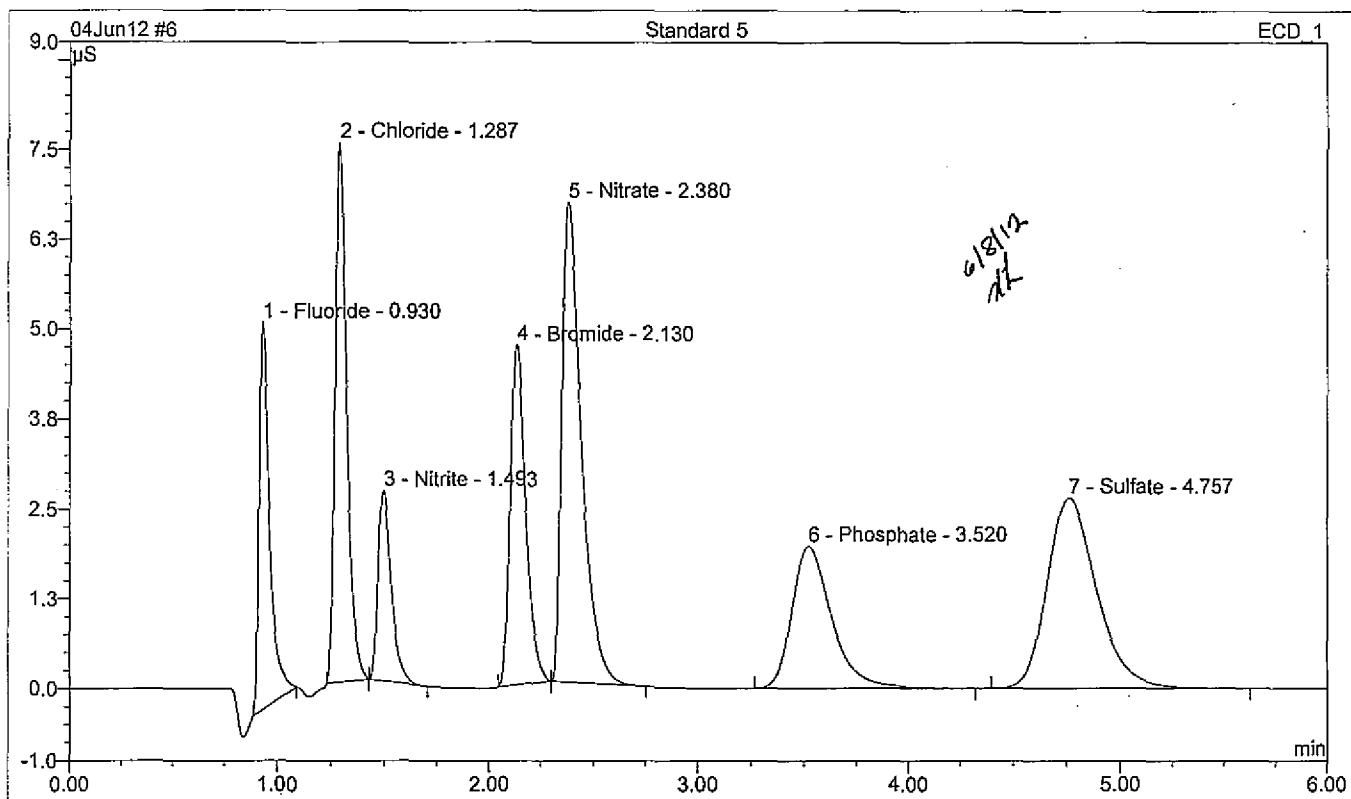
WO1205011	Dimock Residential Groundwater	Suppressor:	SRS
Sample Name:	Standard 4	Injection Volume:	20.0
Vial Number:	5	Channel:	ECD_1
Sample Type:	standard	Suppressor Current	50 mA
Control Program:	Anion Dx-500	Flow Rate:	2.00
Quantif. Method:	ANION TEST-new	Dilution Factor:	1.0000
Recording Time:	6/4/2012 11:17	Sequence:	04Jun12
Run Time (min):	6.00	Column	AS4A



No.	Ret. Time min	Peak Name	Amount ppm	Area $\mu\text{S} \cdot \text{min}$	Height μS	Reported Value ppm
1	0.93	Fluoride	1.0000	0.16267	2.67671	✓
2	1.29	Chloride	2.5160	0.23173	3.62492	✓
3	1.49	Nitrite	0.4945	0.09162	1.28153	
4	2.14	Bromide	4.9453	0.19621	2.21822	✓
5	2.40	Nitrate	1.4811	0.34208	3.20556	
6	3.53	Phosphate	2.4826	0.21040	0.95118	
7	4.76	Sulfate	4.9756	0.34639	1.29187	✓

6 Standard 5

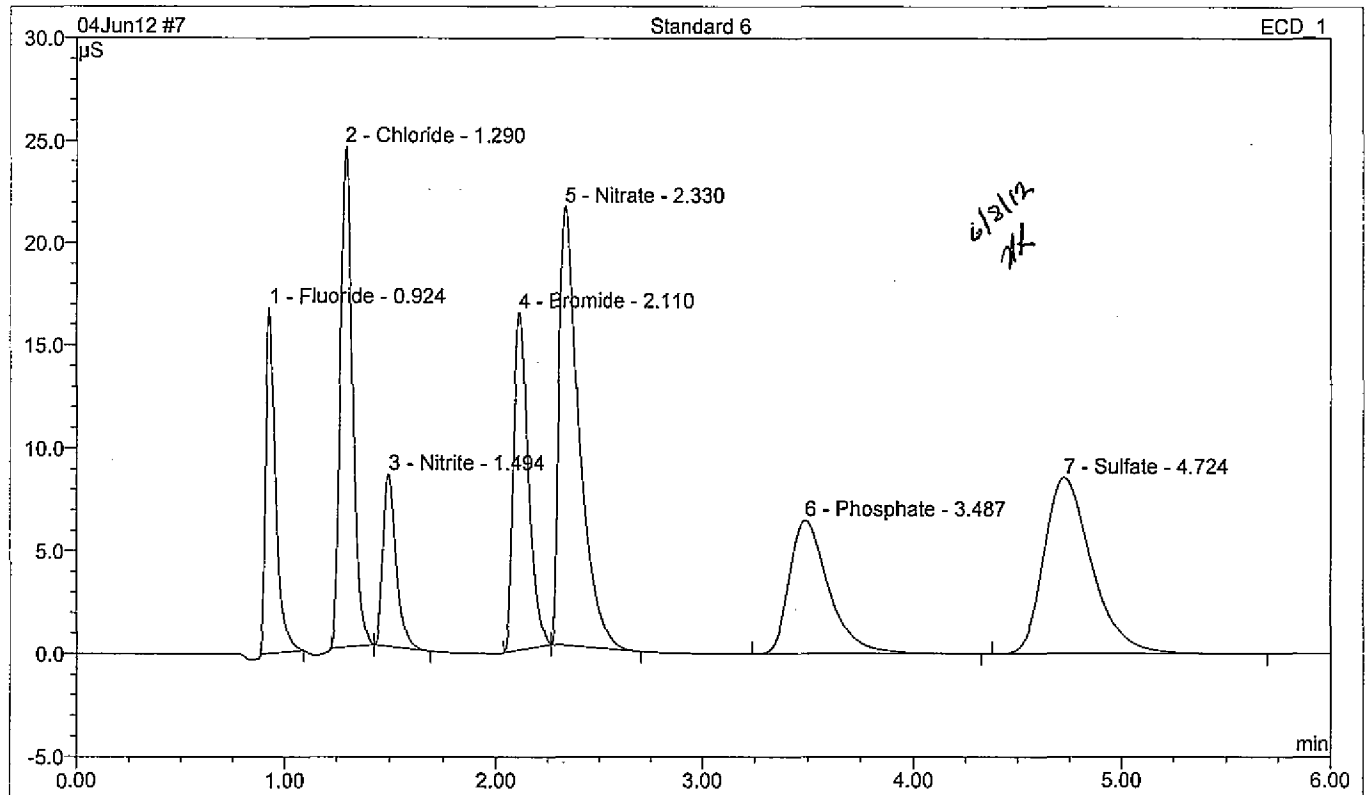
WO1205011	Dimock Residential Groundwater	Suppressor:	SRS
Sample Name:	Standard 5	Injection Volume:	20.0
Vial Number:	6	Channel:	ECD_1
Sample Type:	standard	Suppressor Current	50 mA
Control Program:	Anion Dx-500	Flow Rate:	2.00
Quantif. Method:	ANION TEST-new	Dilution Factor:	1.0000
Recording Time:	6/4/2012 11:26	Sequence:	04Jun12
Run Time (min):	6.00	Column	AS4A



No.	Ret.Time min	Peak Name	Amount ppm	Area $\mu\text{S} \cdot \text{min}$	Height μS	Reported Value ppm
1	0.93	Fluoride	1.9990	0.30650	5.39021	✓
2	1.29	Chloride	4.9886	0.47565	7.50874	✓
3	1.49	Nitrite	1.0035	0.18951	2.65371	
4	2.13	Bromide	10.0329	0.41088	4.72446	✓
5	2.38	Nitrate	3.0122	0.72041	6.67857	
6	3.52	Phosphate	5.0133	0.43212	1.98136	
7	4.76	Sulfate	10.0085	0.71005	2.65489	✓

7 Standard 6

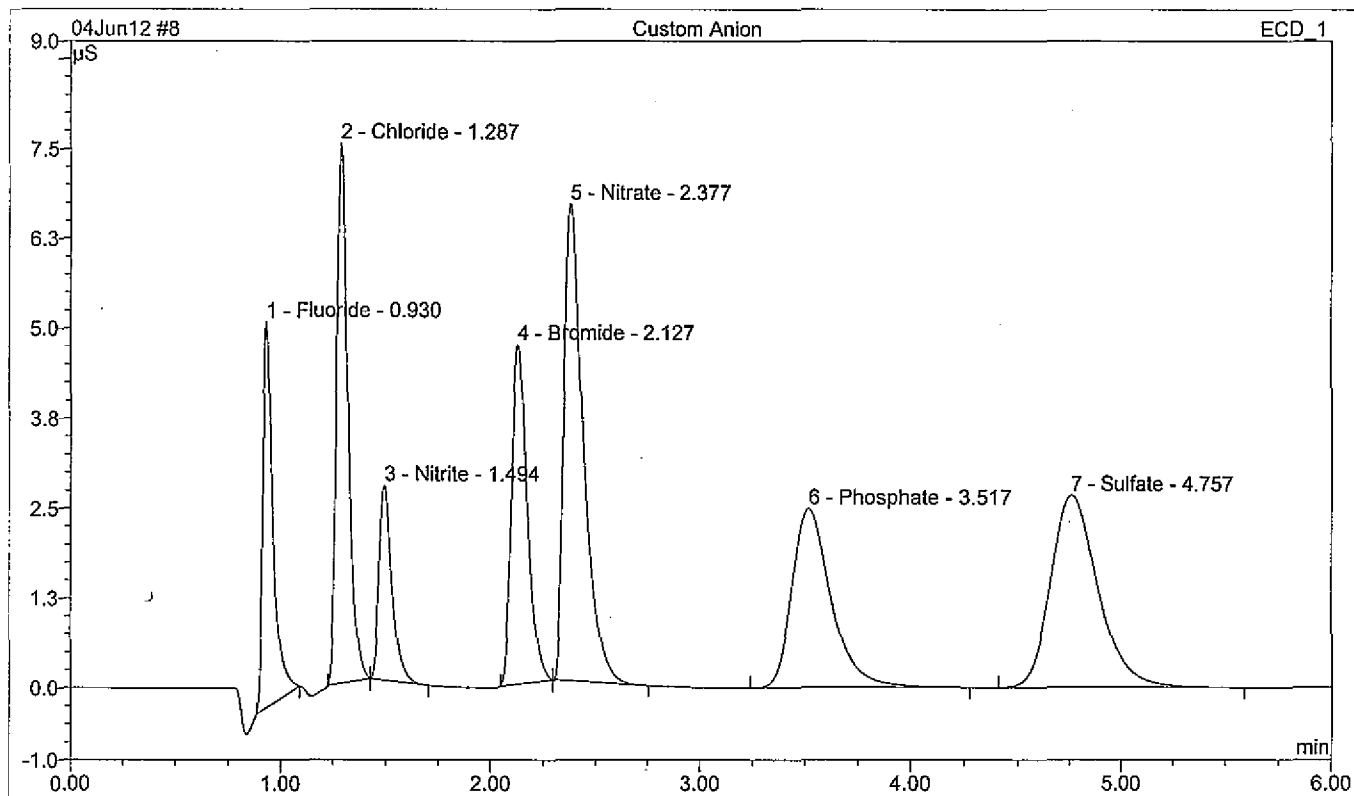
WO1205011	Dimock Residential Groundwater	Suppressor:	SRS
Sample Name:	Standard 6	Injection Volume:	20.0
Vial Number:	7	Channel:	ECD_1
Sample Type:	standard	Suppressor Current	50 mA
Control Program:	Anion Dx-500	Flow Rate:	2.00
Quantif. Method:	ANION TEST-new	Dilution Factor:	1.0000
Recording Time:	6/4/2012 11:34	Sequence:	04Jun12
Run Time (min):	6.00	Column	AS4A



No.	Ret. Time min	Peak Name	Amount ppm	Area $\mu\text{S} \cdot \text{min}$	Height μS	Reported Value ppm
1	0.92	Fluoride	6.0001	0.92908	16.79795	✓
2	1.29	Chloride	15.0006	1.62612	24.39404	✓
3	1.49	Nitrite	2.9998	0.60285	8.39517	
4	2.11	Bromide	29.9982	1.36519	16.41147	✓
5	2.33	Nitrate	8.9993	2.41269	21.35008	
6	3.49	Phosphate	14.9992	1.40371	6.49201	
7	4.72	Sulfate	29.9996	2.28451	8.56679	✓

8 Custom Anion

WO1205011	Dimock Residential Groundwater	Suppressor:	SRS
Sample Name:	Custom Anion	Injection Volume:	20.0
Vial Number:	8	Channel:	ECD_1
Sample Type:	unknown	Suppressor Current:	50 mA
Control Program:	Anion Dx-500	Flow Rate:	2.00
Quantif. Method:	ANION TEST-new	Dilution Factor:	1.0000
Recording Time:	6/4/2012 11:43	Sequence:	04Jun12
Run Time (min):	6.00	Column:	AS4A



No.	Ret.Time min	Peak Name	Amount ppm	Area $\mu\text{S}\cdot\text{min}$	Height μS	Reported Value ppm
1	0.93	Fluoride	1.9746	0.30294	5.37028	1.97
2	1.29	Chloride	4.9988	0.47669	7.51393	5.00 ✓
3	1.49	Nitrite	1.0255	0.19381	2.71345	1.02
4	2.13	Bromide	9.9962	0.40929	4.71768	10.00 ✓
5	2.38	Nitrate	2.9908	0.71496	6.63427	2.99
6	3.52	Phosphate	6.1765	0.53735	2.48663	6.18
7	4.76	Sulfate	10.0838	0.71560	2.67158	10.1 ✓

see next page for data tabulation

Custom Anion Data Tabulation

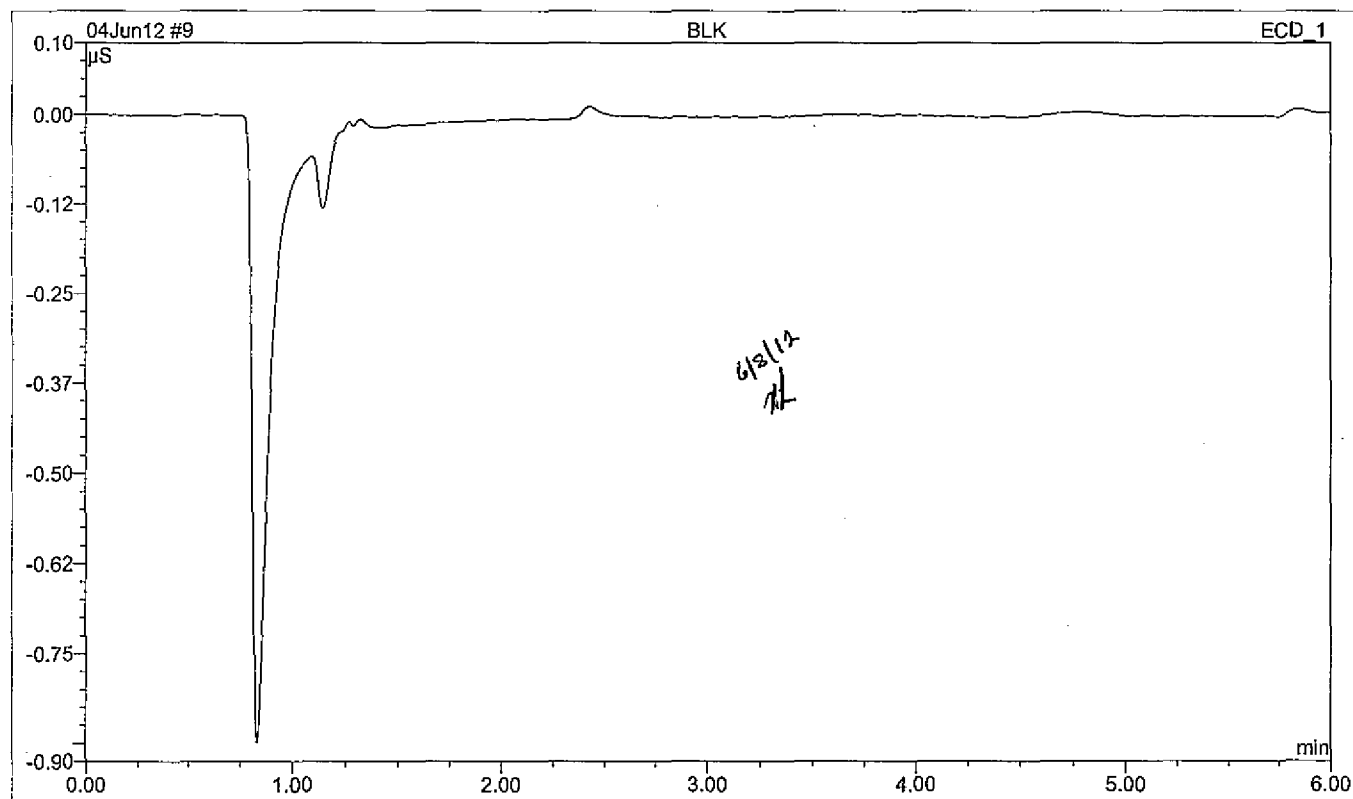
WO1205011 Dimock Residential Groundwater

Peak Name	Amount	True Value	% Recovery	95% CI
Fluoride	1.9746	2.00	99 ✓	1.90-2.10
Chloride	4.9988	5.00	100 ✓	4.50-5.50
Nitrite	1.0255	1.00	103	0.900-1.10
Bromide	9.9962	10.00	100 ✓	9.00-11.0
Nitrate	2.9908	3.00	100	2.70-3.30
Phosphate	6.1765	6.20	100	5.58-6.82
Sulfate	10.0838	10.0	101 ✓	13.5-16.5

6/3/12
JH

9 BLK

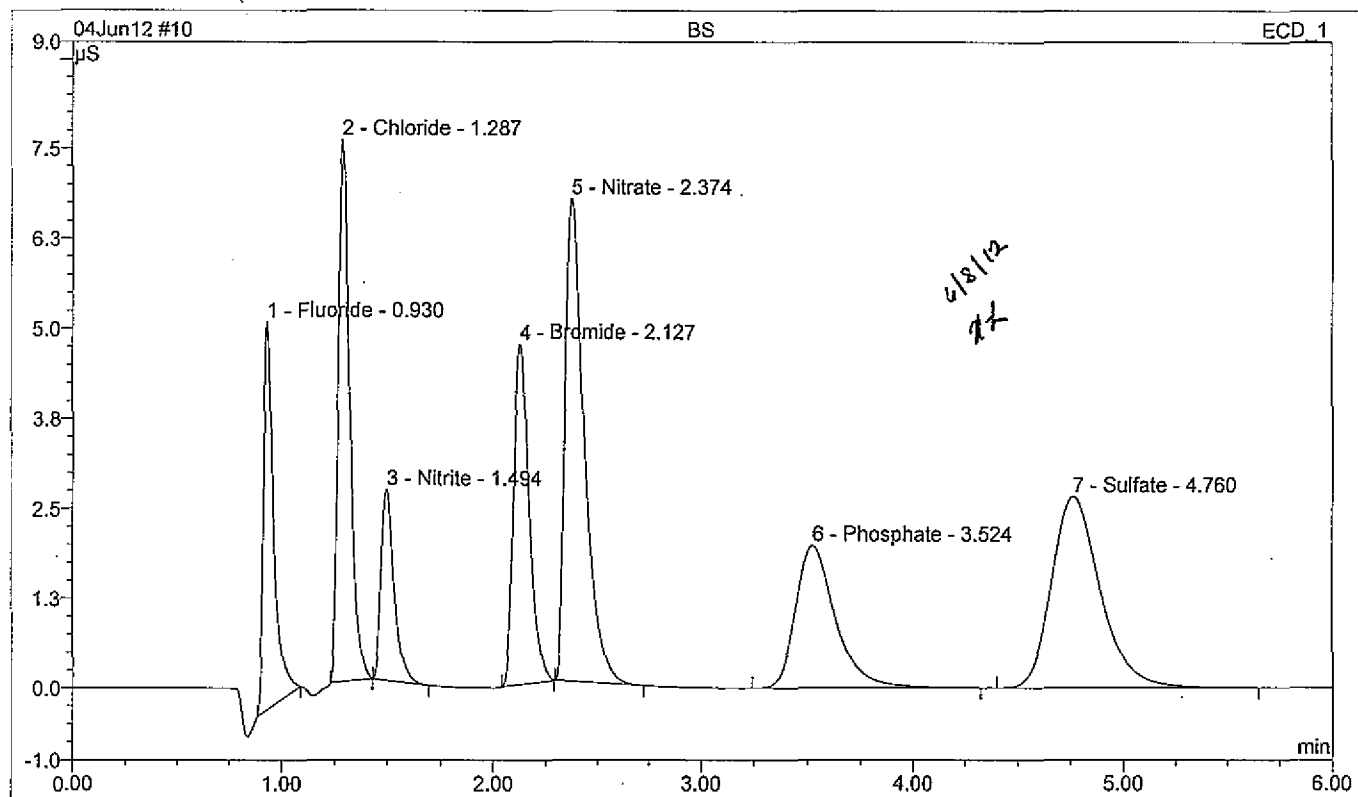
WO1205011	Dimock Residential Groundwater	Suppressor:	SRS
Sample Name:	BLK	Injection Volume:	20.0
Vial Number:	9	Channel:	ECD_1
Sample Type:	unknown	Suppressor Current:	50 mA
Control Program:	Anion Dx-500	Flow Rate:	2.00
Quantif. Method:	ANION TEST-new	Dilution Factor:	1.0000
Recording Time:	6/4/2012 11:51	Sequence:	04Jun12
Run Time (min):	6.00	Column:	AS4A



No.	Ret. Time min	Peak Name	Amount ppm	Area µS*min	Height µS	Reported Value ppm
Fluoride	<0.10 min	✓				
Chloride	<0.25 min	✓				
Nitrite	<0.05 min					
Bromide	<0.50 min	✓				
Nitrate	<0.15 min					
Phosphate	<0.25 min					
Sulfate	<0.50 min	✓				

10 BS

WO1205011	Dimock Residential Groundwater	Suppressor:	SRS
Sample Name:	BS	Injection Volume:	20.0
Vial Number:	10	Channel:	ECD_1
Sample Type:	unknown	Suppressor Current:	50 mA
Control Program:	Anion Dx-500	Flow Rate:	2.00
Quantif. Method:	ANION TEST-new	Dilution Factor:	1.0000
Recording Time:	6/4/2012 11:59	Sequence:	04Jun12
Run Time (min):	6.00	Column:	AS4A



No.	Ret. Time min	Peak Name	Amount ppm	Area $\mu\text{S} \cdot \text{min}$	Height μS	Reported Value ppm
1	0.93	Fluoride	2.0065	0.30760	5.40297	2.91 ✓
2	1.29	Chloride	5.0111	0.47795	7.53362	5.01 ✓
3	1.49	Nitrite	1.0049	0.18977	2.65971	1.00
4	2.13	Bromide	10.0462	0.41146	4.73850	10.0 ✓
5	2.37	Nitrate	3.0172	0.72167	6.70769	3.02
6	3.52	Phosphate	5.0120	0.43199	1.98379	5.01
7	4.76	Sulfate	10.0739	0.71487	2.66611	10.1 ✓

See next page for data table 1.2

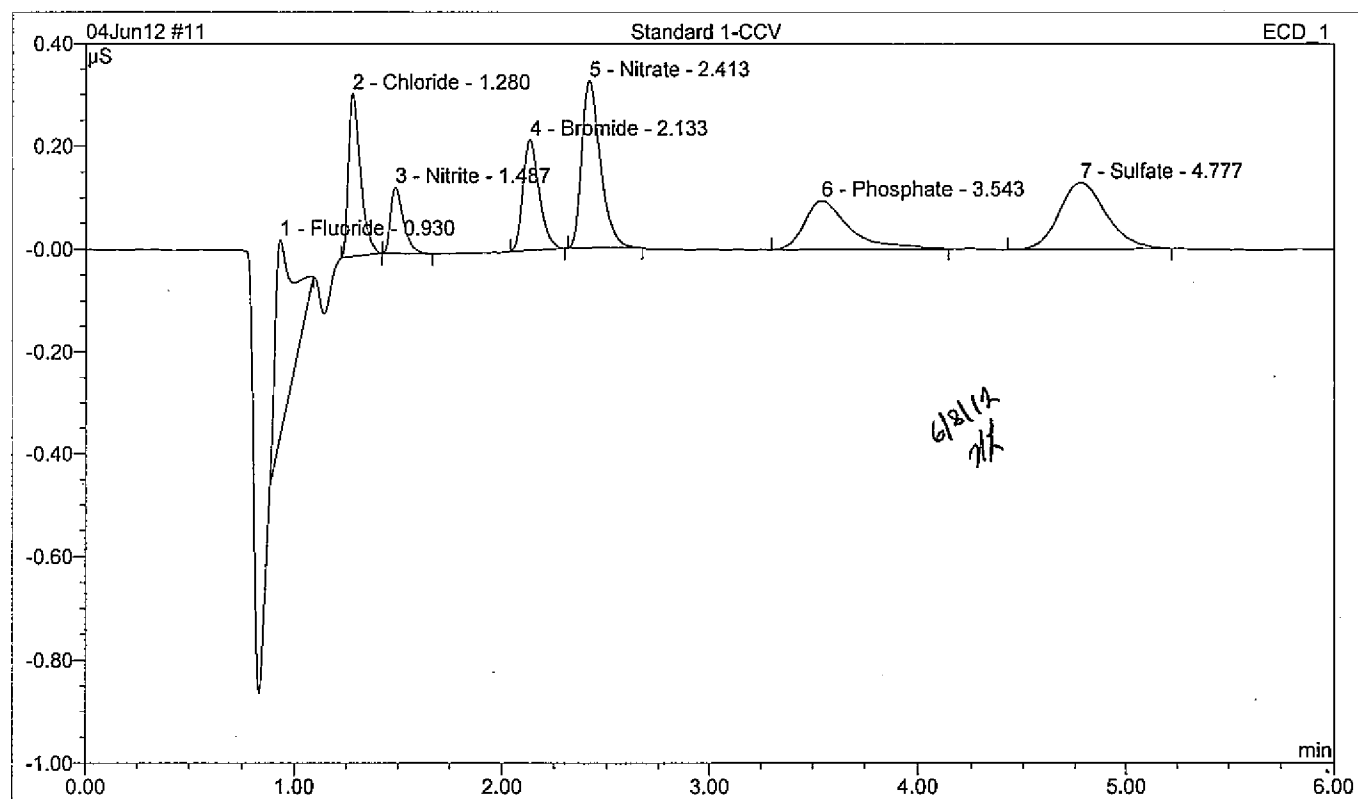
BS Data Compilation

WO1205011 Dimock Residential Groundwater

Peak Name	Amount mg/L	Area	%C	%A	95% CI
Fluoride	2.0065	0.3076	100	(100) ✓	1.80-2.20
Chloride	5.0111	0.4779	100	(100) ✓	1.80-2.20
Nitrite	1.0049	0.1898	100	100	1.80-2.20
Bromide	10.0462	0.4115	100	(100) ✓	1.80-2.20
Nitrate	3.0172	0.7217	101	100	2.70-3.30
Phosphate	5.0120	0.4320	100	100	4.50-5.50
Sulfate	10.0739	0.7149	101	(101) ✓	9.00-11.0

11 Standard 1-CCV

WO1205011	Dimock Residential Groundwater	Suppressor:	SRS
Sample Name:	Standard 1-CCV	Injection Volume:	20.0
Vial Number:	11	Channel:	ECD_1
Sample Type:	unknown	Suppressor Current	50 mA
Control Program:	Anion Dx-500	Flow Rate:	2.00
Quantif. Method:	ANION TEST-new	Dilution Factor:	1.0000
Recording Time:	6/4/2012 12:08	Sequence:	04Jun12
Run Time (min):	6.00	Column	AS4A



No.	Ret.Time min	Peak Name	Amount ppm	Area $\mu\text{S} \cdot \text{min}$	Height μS	Reported Value ppm
1	0.93	Fluoride	0.0941	0.03624	0.38989	0.094 ✓
2	1.28	Chloride	0.2396	0.02125	0.31641	0.240 ✓
3	1.49	Nitrite	0.0527	0.00910	0.12740	0.053
4	2.13	Bromide	0.5263	0.01914	0.21428	0.526 ✓
5	2.41	Nitrate	0.1607	0.03363	0.32465	0.161
6	3.54	Phosphate	0.2571	0.02361	0.09414	0.257
7	4.78	Sulfate	0.5053	0.03440	0.12847	0.505 ✓

See data tabulation on next page

WO1205011 Dimock Residential Groundwater

Standard 1 Data Compilation For NQL Verification

Peak Name	Amount mg/L	Area	Height	%C	%A	95% CI
Fluoride	0.0941	0.0362	0.3899	94 ✓	96	0.060-0.140
Chloride	0.2396	0.0213	0.3164	96 ✓	99	0.150-0.350
Nitrite	0.0527	0.0091	0.1274	105	99	0.030-0.070
Bromide	0.5263	0.0191	0.2143	105 ✓	99	0.300-0.700
Nitrate	0.1607	0.0336	0.3246	107	99	0.090-0.210
Phosphate	0.2571	0.0236	0.0941	103	93	0.150-0.350
Sulfate	0.5053	0.0344	0.1285	101 ✓	102	0.300-0.700

4/8/12
dk

default-revised-anions/Standard 1-CS

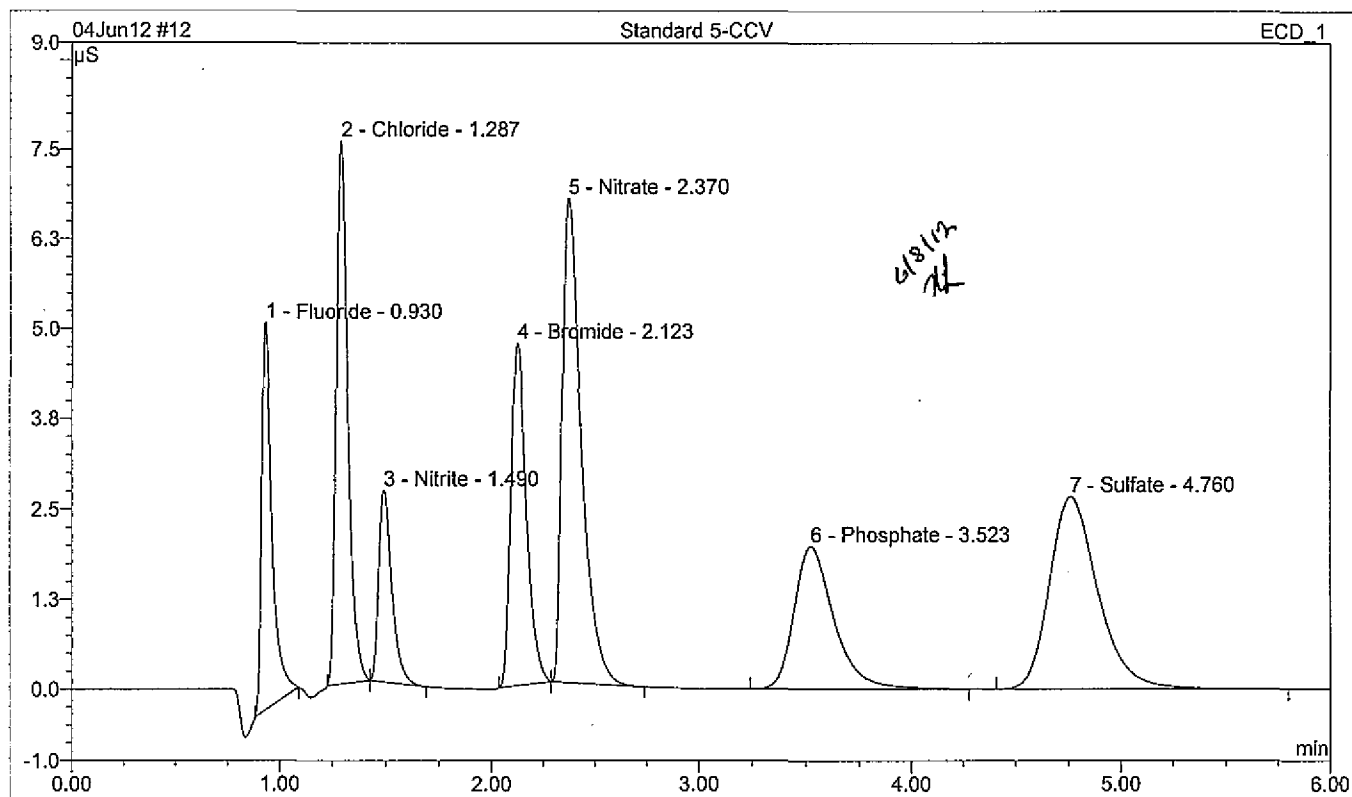
Chromeleon (c) Dionex 1996-2001
Version 6.80 SR9b Build 2682 (164470)

DIM0205729

DIM0205764

12 Standard 5-CCV

WO1205011	Dimock Residential Groundwater	Suppressor:	SRS
Sample Name:	Standard 5-CCV	Injection Volume:	20.0
Vial Number:	12	Channel:	ECD_1
Sample Type:	unknown	Suppressor Current	50 mA
Control Program:	Anion Dx-500	Flow Rate:	2.00
Quantif. Method:	ANION TEST-new	Dilution Factor:	1.0000
Recording Time:	6/4/2012 12:16	Sequence:	04Jun12
Run Time (min):	6.00	Column	AS4A



No.	Ret.Time min	Peak Name	Amount ppm	Area $\mu\text{S}\cdot\text{min}$	Height μS	Reported Value ppm
1	0.93	Fluoride	2.0029	0.30708	5.38423	2.00 ✓
2	1.29	Chloride	5.0269	0.47955	7.54540	5.03 ✓
3	1.49	Nitrite	1.0057	0.18993	2.65533	1.00
4	2.12	Bromide	10.0588	0.41201	4.74761	10.0 ✓
5	2.37	Nitrate	3.0222	0.72295	6.72489	3.02
6	3.52	Phosphate	5.0176	0.43250	1.98397	5.02
7	4.76	Sulfate	10.0700	0.71458	2.66926	10.1 ✓

see data tabulation on next page

Standard 5 Data Compilation

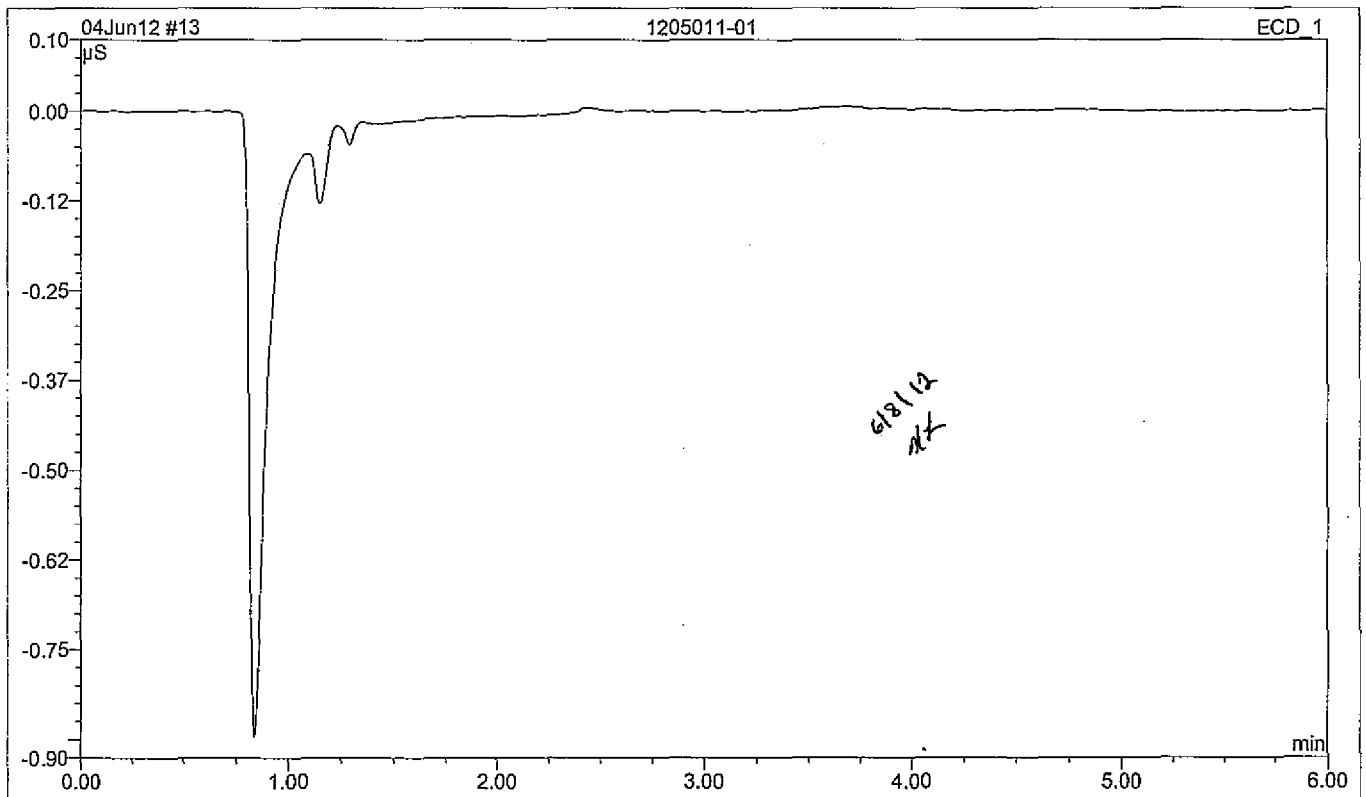
WO1205011 Dimock Residential Groundwater

Peak Name	Amount mg/L	Area	Height	%C	%A	95% CI
Fluoride	2.0029	0.3071	5.3842	100 ✓	100	1.80-2.20
Chloride	5.0269	0.4796	7.5454	101 ✓	101	4.50-5.50
Nitrite	1.0057	0.1899	2.6553	101	100	0.900-1.10
Bromide	10.0588	0.4120	4.7476	101 ✓	100	9.00-11.0
Nitrate	3.0222	0.7229	6.7249	101	100	2.70-3.30
Phosphate	5.0176	0.4325	1.9840	100	100	4.50-5.50
Sulfate	10.0700	0.7146	2.6693	101 ✓	101	9.00-11.0

6/8/12
JK

13 1205011-01

WO1205011	Dimock Residential Groundwater	Suppressor:	SRS
Sample Name:	1205011-01	Injection Volume:	20.0
Vial Number:	13	Channel:	ECD_1
Sample Type:	unknown	Suppressor Current	50 mA
Control Program:	Anion Dx-500	Flow Rate:	2.00
Quantif. Method:	ANION TEST-new	Dilution Factor:	1.0000
Recording Time:	6/4/2012 12:25	Sequence:	04Jun12
Run Time (min):	6.00	Column	AS4A

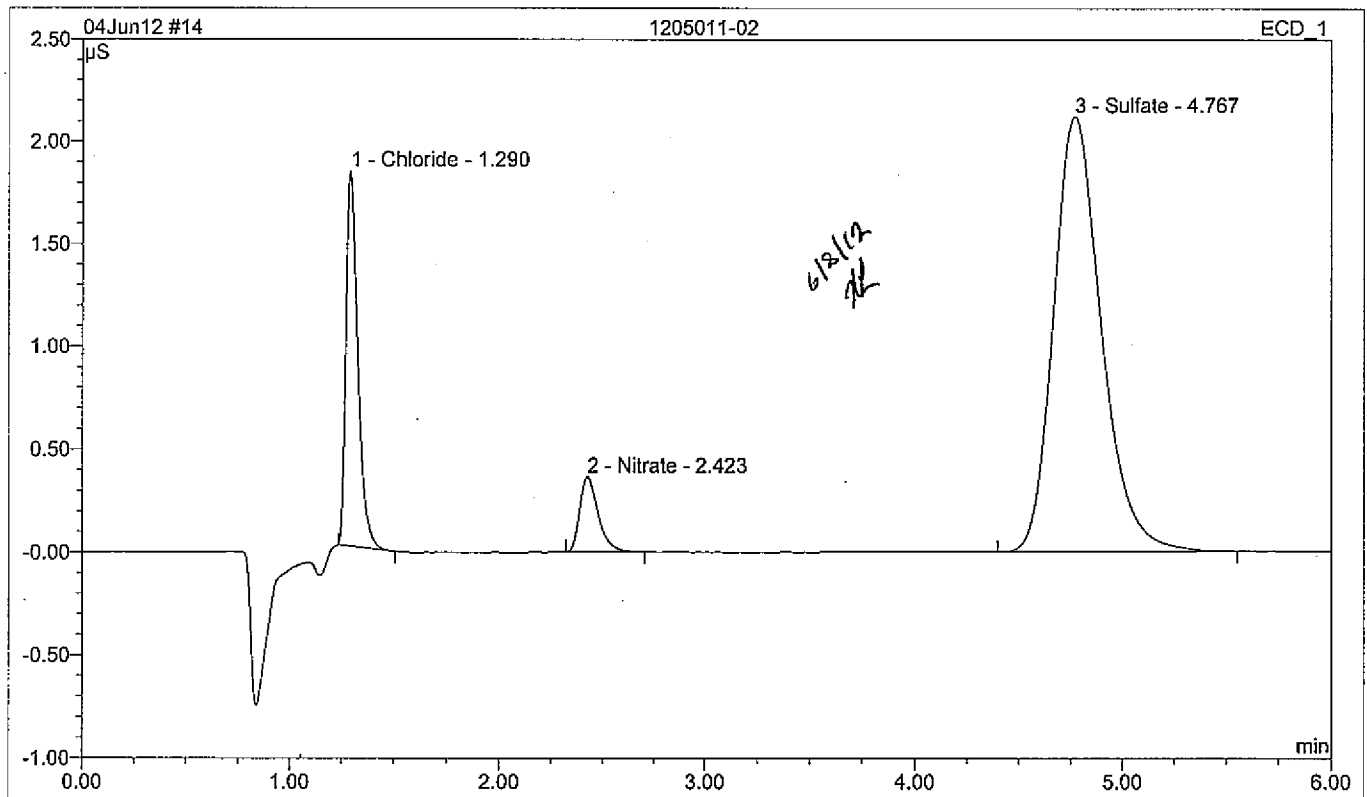


No.	Ret. Time min	Peak Name	Amount ppm	Area μS*min	Height μS	Reported Value ppm
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Fluoride ~~<0.10~~ ppm ✓
 Chloride ~~<0.25~~ ppm ✓
 Nitrite ~~<0.05~~ ppm ✓
 Bromide ~~<0.50~~ ppm ✓
 Nitrate ~~<0.15~~ ppm ✓
 Phosphate ~~<0.25~~ ppm ✓
 Sulfate ~~<0.50~~ ppm ✓

14 1205011-02

WO1205011	Dimock Residential Groundwater	Suppressor:	SRS
Sample Name:	1205011-02	Injection Volume:	20.0
Vial Number:	14	Channel:	ECD_1
Sample Type:	unknown	Suppressor Current	50 mA
Control Program:	Anion Dx-500	Flow Rate:	2.00
Quantif. Method:	ANION TEST-new	Dilution Factor:	1.0000
Recording Time:	6/4/2012 12:33	Sequence:	04Jun12
Run Time (min):	6.00	Column	AS4A



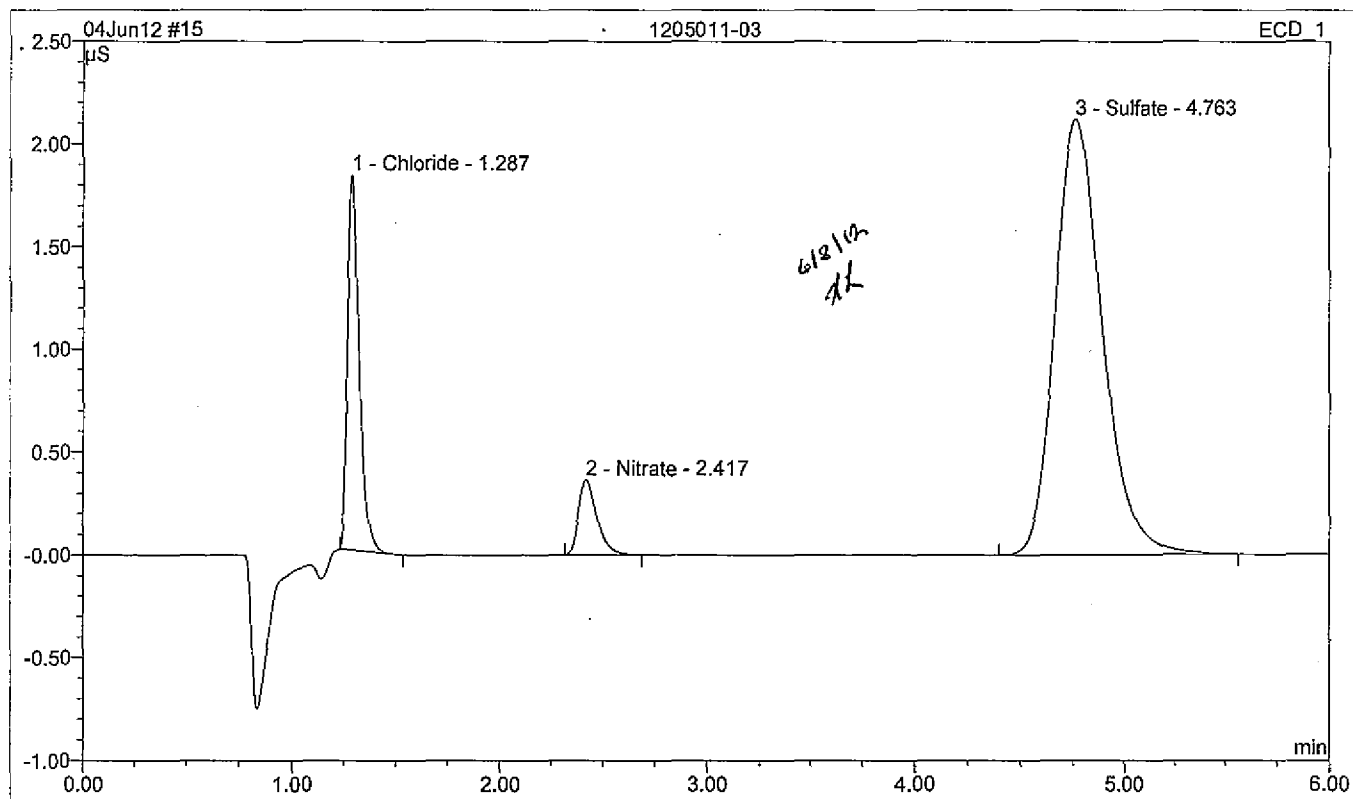
No.	Ret. Time min	Peak Name	Amount ppm	Area $\mu\text{S} \cdot \text{min}$	Height μS	Reported Value ppm
1	1.29	Chloride	1.3163	0.11912	1.82449	(1.32) ✓
2	2.42	Nitrate	0.1785	0.03767	0.36401	
3	4.77	Sulfate	8.0324	0.56569	2.11793	(8.03) ✓

Fluoride
Bromide

(0.10) ✓
(0.50) ✓

15 1205011-03

WO1205011	Dimock Residential Groundwater	Suppressor:	SRS
Sample Name:	1205011-03	Injection Volume:	20.0
Vial Number:	15	Channel:	ECD_1
Sample Type:	unknown	Suppressor Current:	50 mA
Control Program:	Anion Dx-500	Flow Rate:	2.00
Quantif. Method:	ANION TEST-new	Dilution Factor:	1.0000
Recording Time:	6/4/2012 12:41	Sequence:	04Jun12
Run Time (min):	6.00	Column:	AS4A



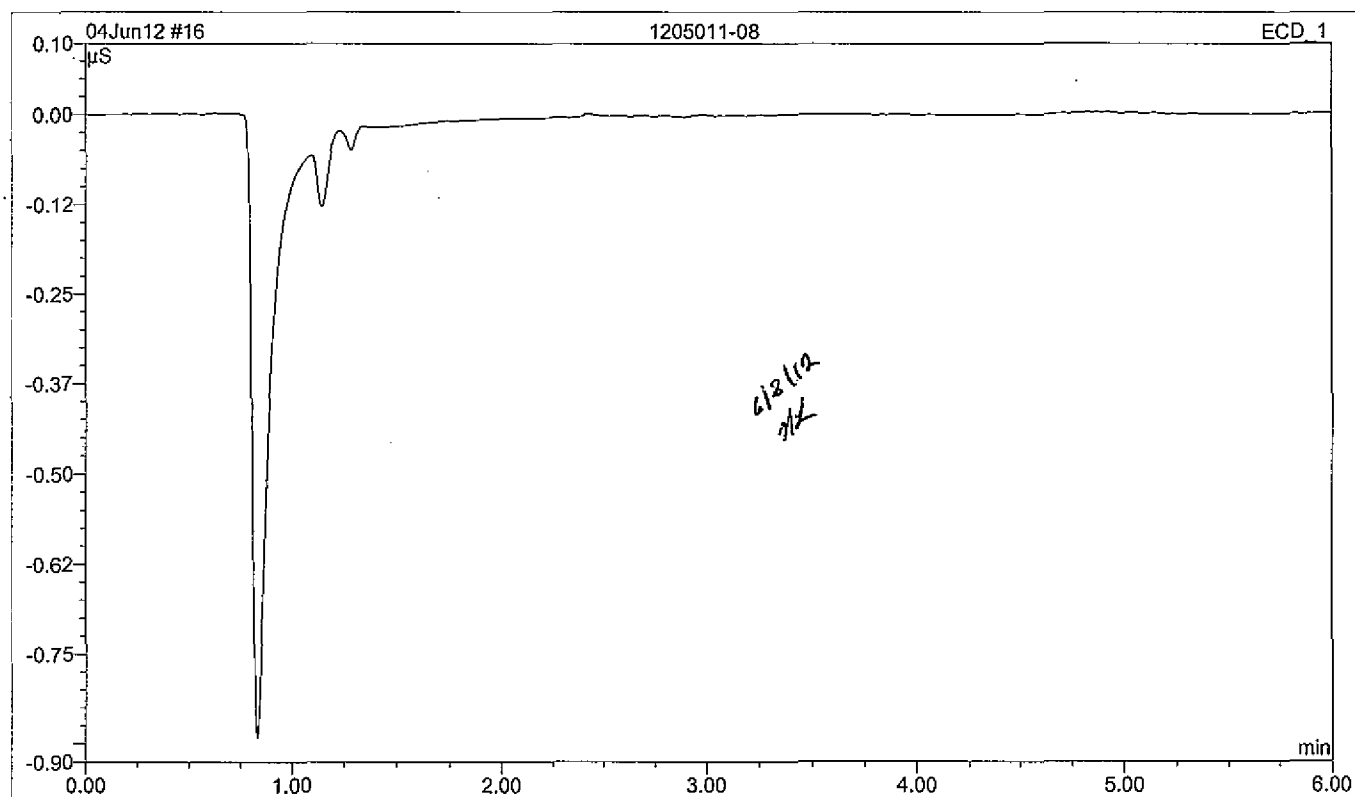
No.	Ret. Time min	Peak Name	Amount ppm	Area µS*min	Height µS	Reported Value ppm
1	1.29	Chloride	1.3153	0.11903	1.82398	0.32 ✓
2	2.42	Nitrate	0.1789	0.03777	0.36464	
3	4.76	Sulfate	8.0459	0.56668	2.11838	0.04 ✓

Fluoride
Bromide

0.10 ✓
0.50 ✓

16 1205011-08

WO1205011	Dimock Residential Groundwater	Suppressor:	SRS
Sample Name:	1205011-08	Injection Volume:	20.0
Vial Number:	16	Channel:	ECD_1
Sample Type:	unknown	Suppressor Current	50 mA
Control Program:	Anion Dx-500	Flow Rate:	2.00
Quantif. Method:	ANION TEST-new	Dilution Factor:	1.0000
Recording Time:	6/4/2012 12:50	Sequence:	04Jun12
Run Time (min):	6.00	Column	AS4A

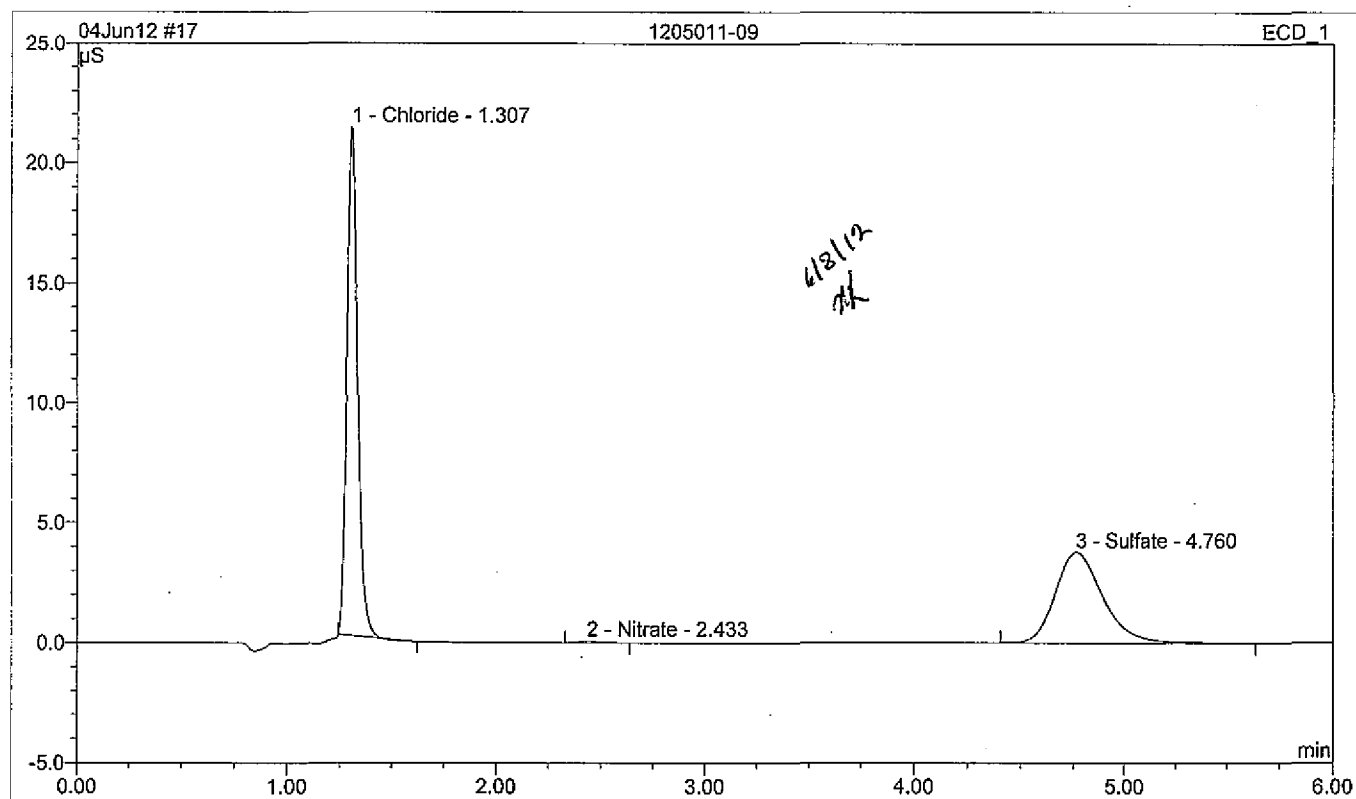


No.	Ret. Time min	Peak Name	Amount ppm	Area µS*min	Height µS	Reported Value ppm
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Fluoride - <0.10 ppm ✓
 Chloride - <0.25 ppm ✓
 Nitrite - <0.05 ppm ✓
 Bromide - <0.50 ppm ✓
 Nitrate - <0.15 ppm ✓
 Phosphate - <0.25 ppm ✓
 Sulfate - <0.50 ppm ✓

17 1205011-09

WO1205011	Dimock Residential Groundwater	Suppressor:	SRS
Sample Name:	1205011-09	Injection Volume:	20.0
Vial Number:	17	Channel:	ECD_1
Sample Type:	unknown	Suppressor Current	50 mA
Control Program:	Anion Dx-500	Flow Rate:	2.00
Quantif. Method:	ANION TEST-new	Dilution Factor:	1.0000
Recording Time:	6/4/2012 12:58 ✓	Sequence:	04Jun12
Run Time (min):	6.00	Column	AS4A



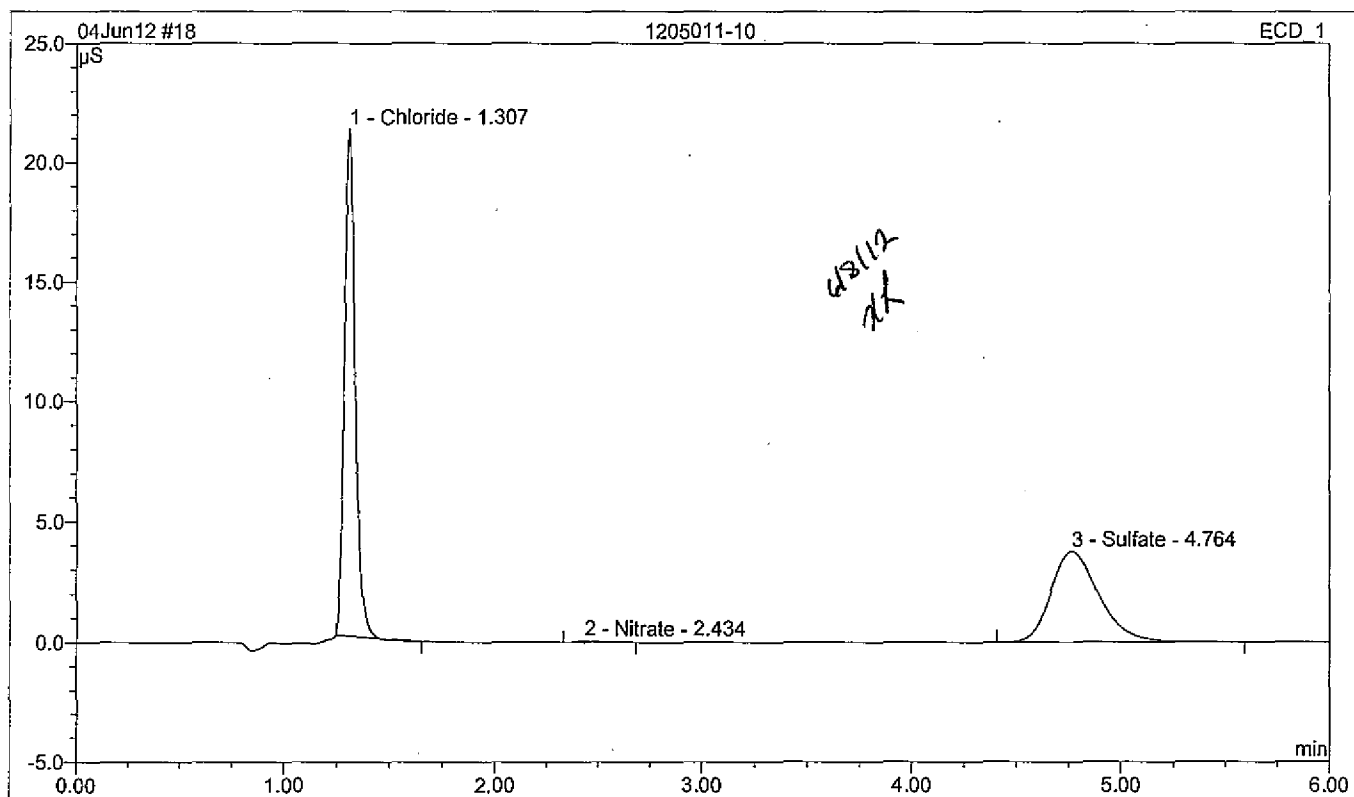
No.	Ret.Time min	Peak Name	Amount ppm	Area μS*min	Height μS	Reported Value ppm
1	1.31	Chloride	11.8945	1.24126	21.20112	11.9 ✓
2	2.43	Nitrate	0.0484	0.00815	0.08146	
3	4.76	Sulfate	13.8523	0.99666	3.75801	13.8 ✓

Fluoride
Bromide

<0.10 ✓
<0.50 ✓

18 1205011-10

WO1205011	Dimock Residential Groundwater	Suppressor:	SRS
Sample Name:	1205011-10	Injection Volume:	20.0
Vial Number:	18	Channel:	ECD_1
Sample Type:	unknown	Suppressor Current	50 mA
Control Program:	Anion Dx-500	Flow Rate:	2.00
Quantif. Method:	ANION TEST-new	Dilution Factor:	1.0000
Recording Time:	6/4/2012 13:07	Sequence:	04Jun12
Run Time (min):	6.00	Column	AS4A



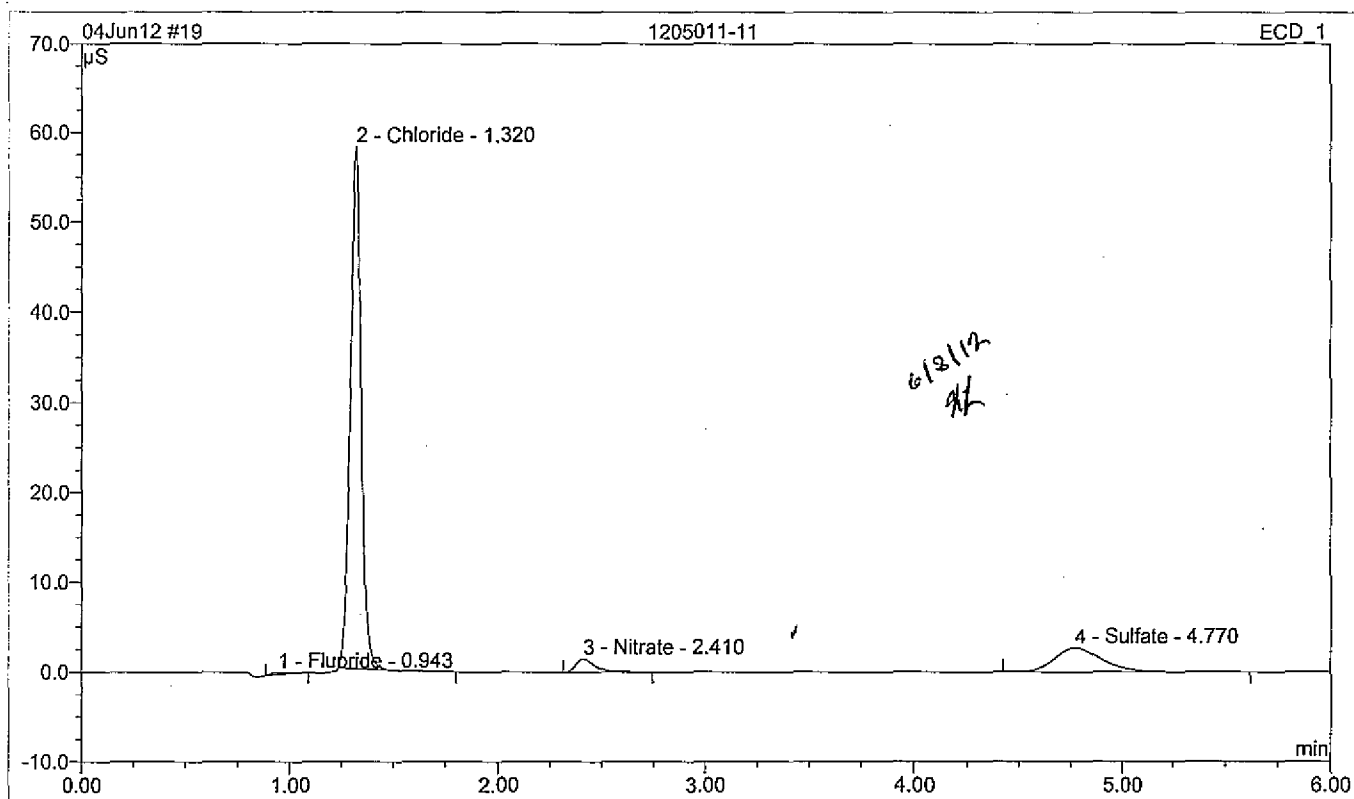
No.	Ret. Time min	Peak Name	Amount ppm	Area μS*min	Height μS	Reported Value ppm
1	1.31	Chloride	11.8893	1.24063	21.14538	11.9 ✓
2	2.43	Nitrate	0.0510	0.00873	0.08387	
3	4.76	Sulfate	13.8429	0.99595	3.75606	13.8 ✓

Fluoride
Bromide

Color
Color

19 1205011-11

WO1205011	Dimock Residential Groundwater	Suppressor:	SRS
Sample Name:	1205011-11	Injection Volume:	20.0
Vial Number:	19	Channel:	ECD_1
Sample Type:	unknown	Suppressor Current:	50 mA
Control Program:	Anion Dx-500	Flow Rate:	2.00
Quantif. Method:	ANION TEST-new	Dilution Factor:	1.0000
Recording Time:	6/4/2012 13:15	Sequence:	04Jun12
Run Time (min):	6.00	Column:	AS4A



No.	Ret. Time min	Peak Name	Amount ppm	Area µS*min	Height µS	Reported Value ppm
1	0.94	Fluoride	0.0166	0.02560	0.24744	0.10 ✓
2	1.32	Chloride	27.6775	3.45743	58.03138	OVERSEAK ✓
3	2.41	Nitrate	0.6824	0.15354	1.47311	
4	4.77	Sulfate	10.0268	0.71140	2.66677	100 ✓

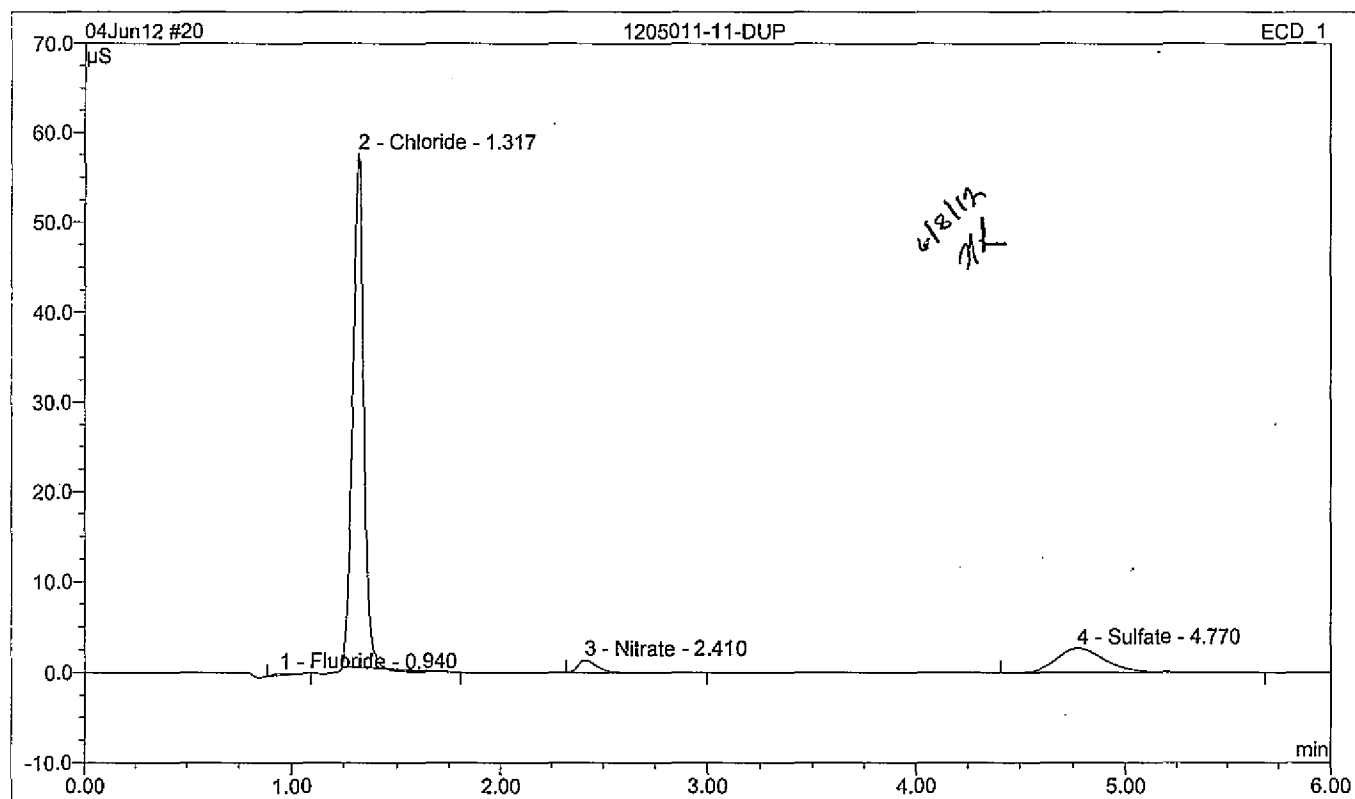
fluoride
bromide

0.10
0.20 ✓

See pg. 23-23 for CF retention
see next page for data tabulation

20 1205011-11-DUP

WO1205011	Dimock Residential Groundwater	Suppressor:	SRS
Sample Name:	1205011-11-DUP	Injection Volume:	20.0
Vial Number:	20	Channel:	ECD_1
Sample Type:	unknown	Suppressor Current	50 mA
Control Program:	Anion Dx-500	Flow Rate:	2.00
Quantif. Method:	ANION TEST-new	Dilution Factor:	1.0000
Recording Time:	6/4/2012 13:23	Sequence:	04Jun12
Run Time (min):	6.00	Column	AS4A



No.	Ret. Time min	Peak Name	Amount ppm	Area µS*min	Height µS	Reported Value ppm
1	0.94	Fluoride	0.0098	0.02466	0.24146	0.10 ✓
2	1.32	Chloride	26.9656	3.34349	57.06452	0.50 ✓
3	2.41	Nitrate	0.6385	0.14334	1.36897	
4	4.77	Sulfate	9.8980	0.70193	2.63165	9.89 ✓

Dromide

0.50 ✓

See pg 24-24 for Cl- return

Summary Sheet for 1205011-11

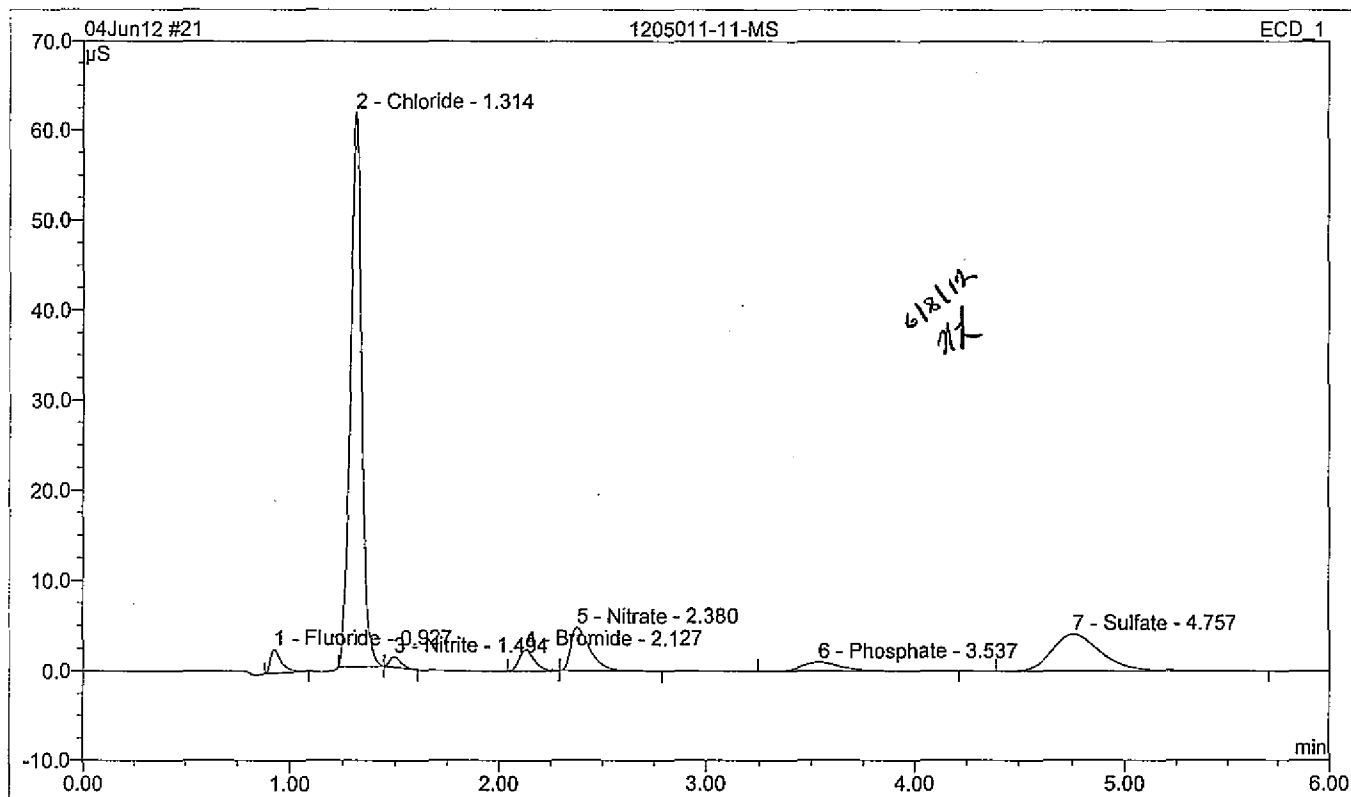
WO1205011 Dimock Residential Groundwater

Anion	Sample Result mg/L	DUP mg/L	Mean Result mg/L	RPD	% Recovery
Fluoride	U	U	U	NA	98
Bromide	U	U	U	NA	100
Sulfate	10.0 ✓	9.9 9.99 ✓	10.0	1	98 ✓

R
6/10/126/10/12
11

21 1205011-11-MS

WO1205011	Dimock Residential Groundwater	Suppressor:	SRS
Sample Name:	1205011-11-MS	Injection Volume:	20.0
Vial Number:	21	Channel:	ECD_1
Sample Type:	unknown	Suppressor Current	50 mA
Control Program:	Anion Dx-500	Flow Rate:	2.00
Quantif. Method:	ANION TEST-new	Dilution Factor:	1.0000
Recording Time:	6/4/2012 13:32	Sequence:	04Jun12
Run Time (min):	6.00	Column	AS4A



No.	Ret. Time min	Peak Name	Amount ppm	Area µS*min	Height µS	Reported Value ppm
1	0.93	Fluoride	0.9778	0.15953	2.62099	0.978 ✓
2	1.31	Chloride	29.5723	3.76712	61.49161	over scale
3	1.49	Nitrite	0.3916	0.07219	1.17343	
4	2.13	Bromide	5.0212	0.19933	2.30204	5.02 ✓
5	2.38	Nitrate	2.1452	0.50344	4.76780	
6	3.54	Phosphate	2.4984	0.21176	0.95861	
7	4.76	Sulfate	14.9380	1.07901	4.05938	14.9 ✓

See next page for data tabulation
See pg 25-25 for Cl- return

Spike Recovery Calculation for 1205011-11

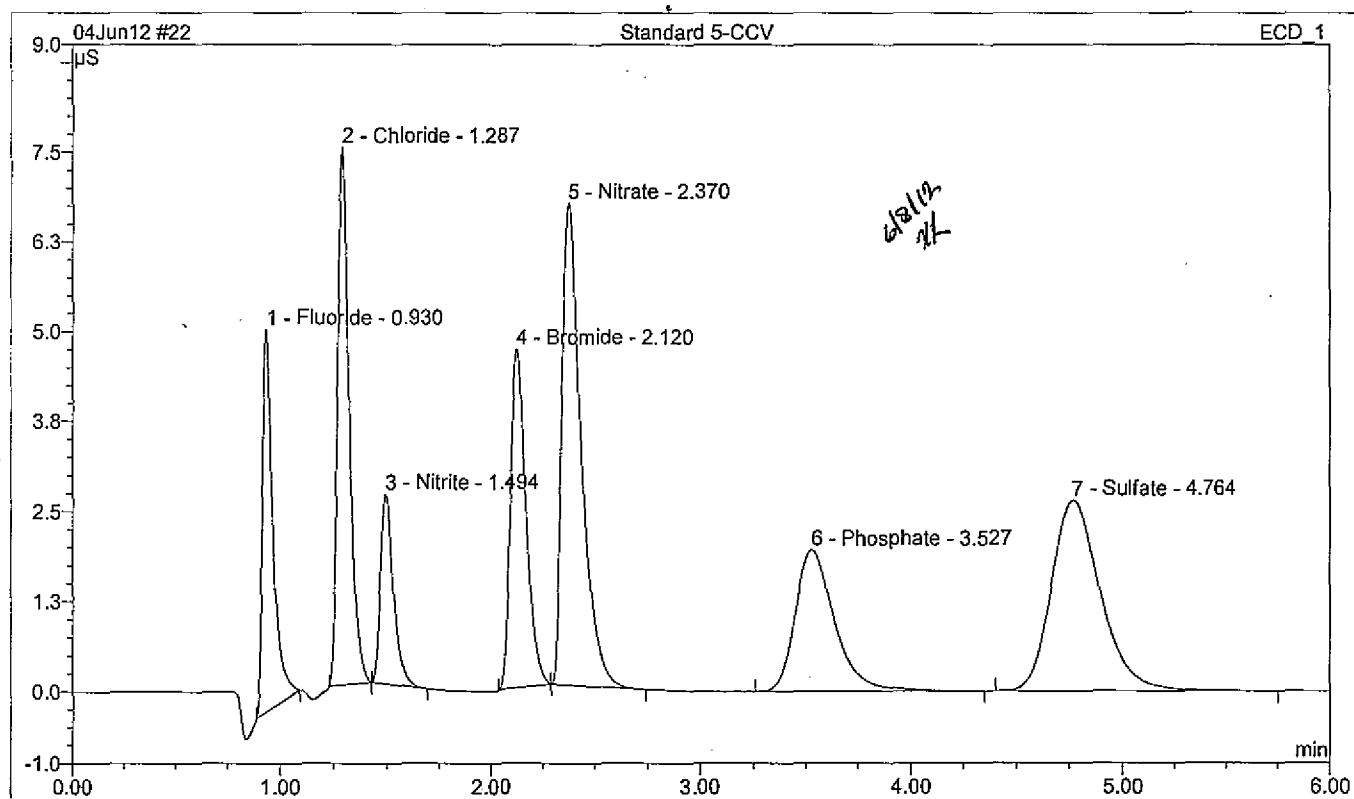
WO1205011 Dimock Residential Groundwater

Anion	Spiked Result mg/L	Reported Result mg/L	Spike Conc. mg/L	% Recovery
Fluoride	0.978 ✓	0.000	1.00	98 ✓
Bromide	5.02 ✓	0.00	5.00	100 ✓
Sulfate	14.9 ✓	10.0	5.00	98 ✓

6/8/12
AK

22 Standard 5-CCV

WO1205011	Dimock Residential Groundwater	Suppressor:	SRS
Sample Name:	Standard 5-CCV	Injection Volume:	20.0
Vial Number:	22	Channel:	ECD_1
Sample Type:	unknown	Suppressor Current	50 mA
Control Program:	Anion Dx-500	Flow Rate:	2.00
Quantif. Method:	ANION TEST-new	Dilution Factor:	1.0000
Recording Time:	6/4/2012 13:40	Sequence:	04Jun12
Run Time (min):	6.00	Column	AS4A



No.	Ret. Time min	Peak Name	Amount ppm	Area µS*min	Height µS	Reported Value ppm
1	0.93	Fluoride	1.9699	0.30225	5.32519	1.97 ✓
2	1.29	Chloride	4.9852	0.47531	7.47803	4.98 ✓
3	1.49	Nitrite	0.9948	0.18779	2.63713	0.99 ✓
4	2.12	Bromide	9.9832	0.40873	4.70754	9.98 ✓
5	2.37	Nitrate	3.0084	0.71943	6.70055	3.01 ✓
6	3.53	Phosphate	4.9521	0.42664	1.96044	4.95 ✓
7	4.76	Sulfate	10.0085	0.71005	2.65220	10.0 ✓

See next page for data tabulation

Standard 5 Data Compilation

WO1205011 Dimock Residential Groundwater

Peak Name	Amount mg/L	Area	Height	%C	%A	95% CI
Fluoride	1.9699	0.3022	5.3252	98 ✓	99	1.80-2.20
Chloride	4.9852	0.4753	7.4780	100 ✓	100	4.50-5.50
Nitrite	0.9948	0.1878	2.6371	99	99	0.900-1.10
Bromide	9.9832	0.4087	4.7075	100 ✓	99	9.00-11.0
Nitrate	3.0084	0.7194	6.7005	100	100	2.70-3.30
Phosphate	4.9521	0.4266	1.9604	99	99	4.50-5.50
Sulfate	10.0085	0.7101	2.6522	100 ✓	100	9.00-11.0

6/8/12
AT

default-revised-anions/Standard 5-CS

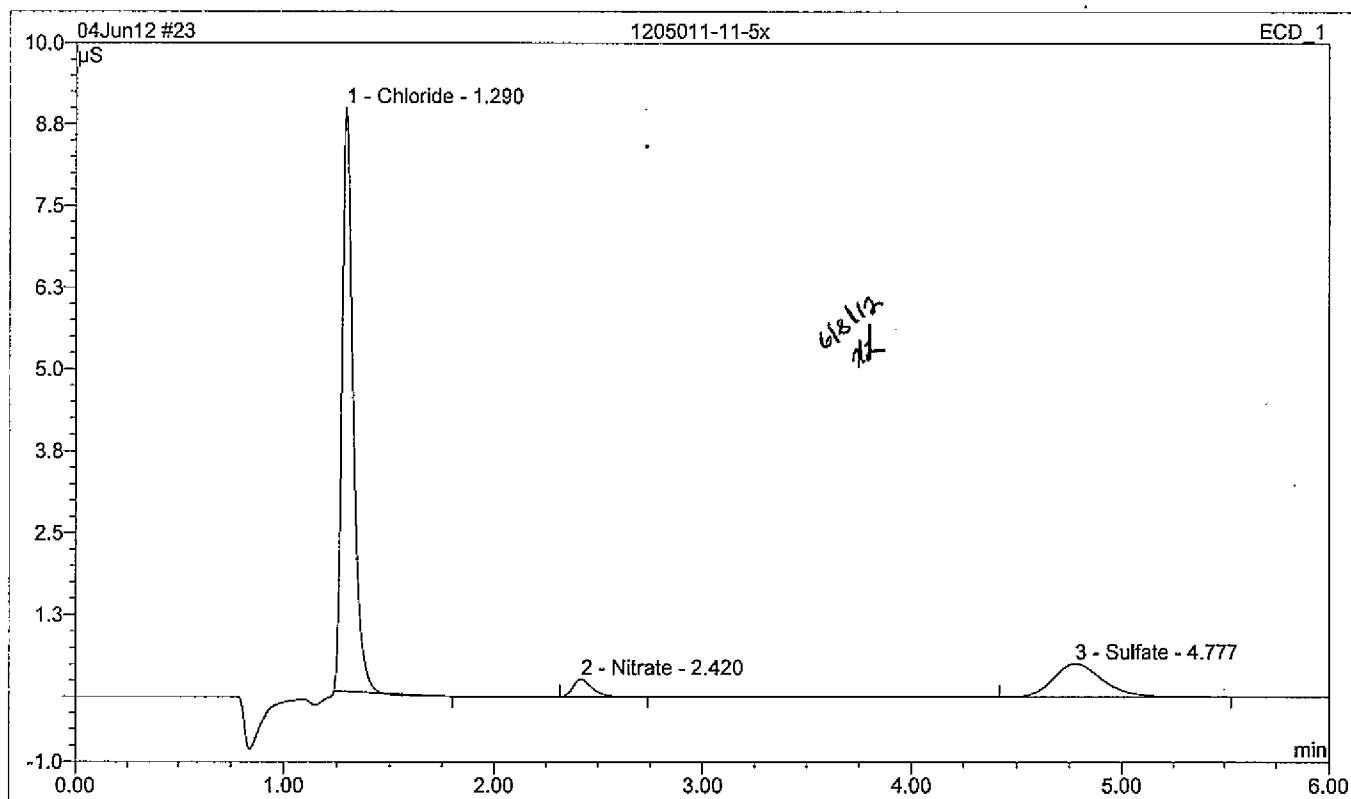
Chromeleon (c) Dionex 1996-2001
Version 6.80 SR9b Build 2682 (164470)

DIM0205729

DIM0205779

23 1205011-11-5x

WO1205011	Dimock Residential Groundwater	Suppressor:	SRS
Sample Name:	1205011-11-5x	Injection Volume:	20.0
Vial Number:	23	Channel:	ECD_1
Sample Type:	unknown	Suppressor Current:	50 mA
Control Program:	Anion Dx-500	Flow Rate:	2.00
Quantif. Method:	ANION TEST-new	Dilution Factor:	5.0000
Recording Time:	6/4/2012 14:29	Sequence:	04Jun12
Run Time (min):	6.00	Column:	AS4A



No.	Ret. Time min	Peak Name	Amount ppm	Area μS*min	Height μS	Reported Value ppm
1	1.29	Chloride	28.0087	0.53860	8.92471	28.0 ✓
2	2.42	Nitrate	0.6782	0.02793	0.26552	
3	4.78	Sulfate	9.9714	0.13717	0.50603	

see next page for data tabulation

Summary Sheet for 1205011-11

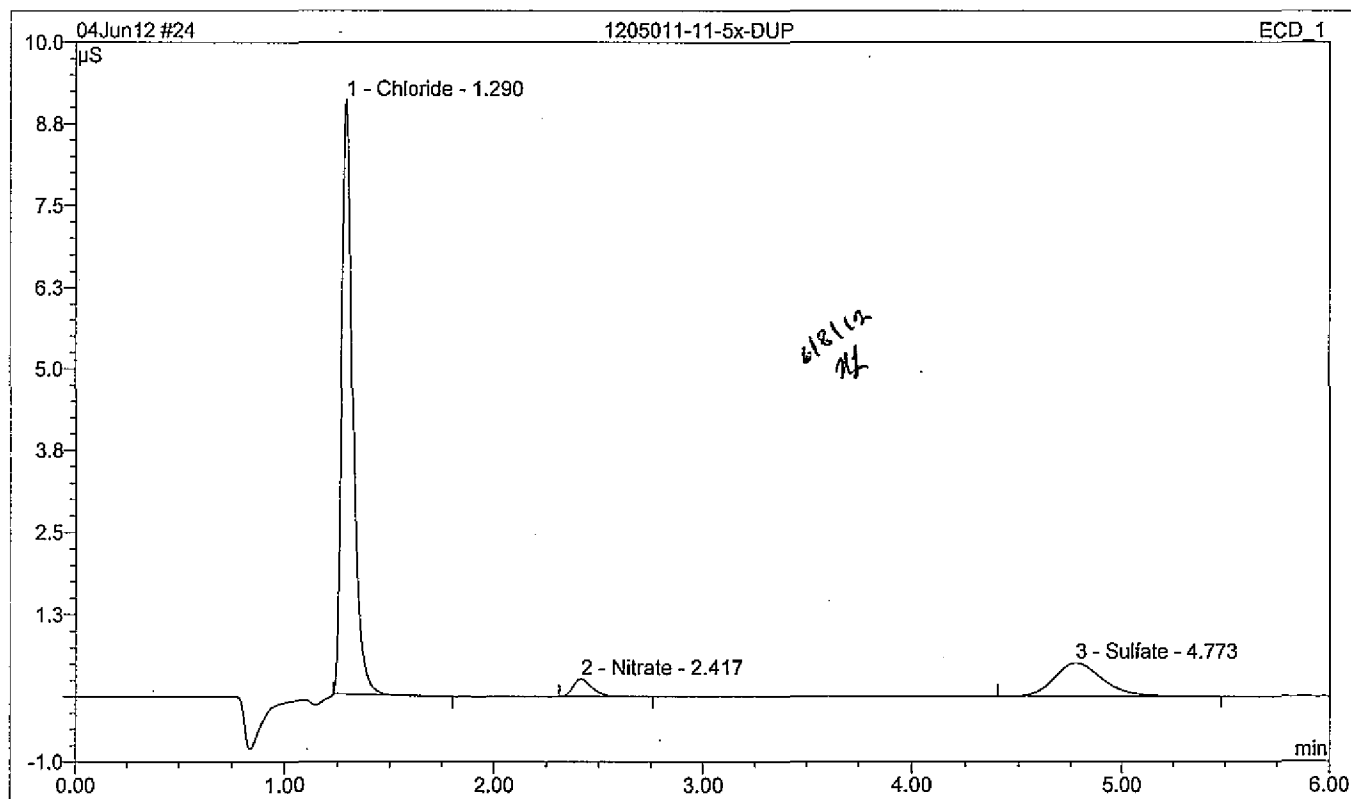
WO1205011 Dimock Residential Groundwater

Anion	Sample Result mg/L	DUP mg/L	Mean Result mg/L	RPD	% Recovery
Chloride	28.0 ✓	28.9 ✓	28.5	3 ✓	103

6/8/12
HL

24 1205011-11-5x-DUP

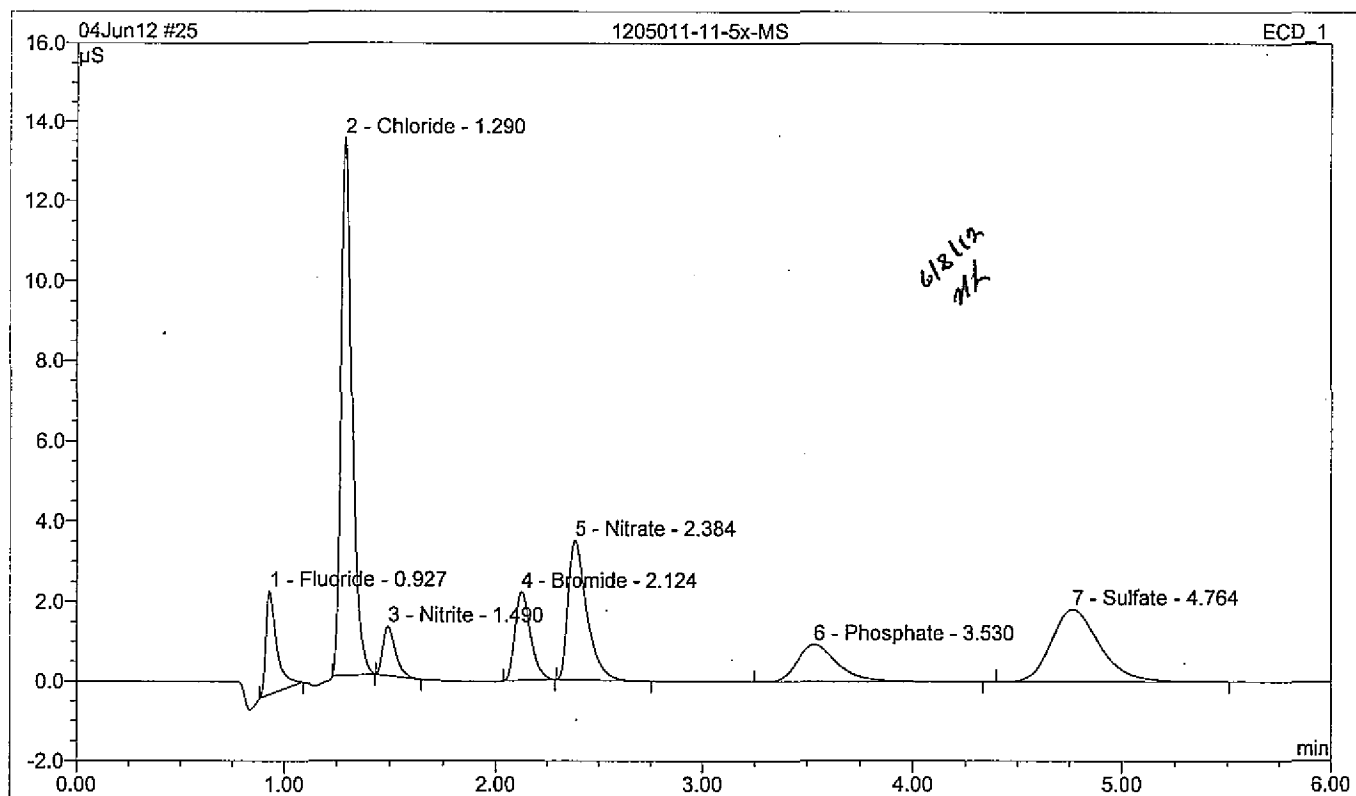
WO1205011	Dimock Residential Groundwater	Suppressor:	SRS
Sample Name:	1205011-11-5x-DUP	Injection Volume:	20.0
Vial Number:	24	Channel:	ECD_1
Sample Type:	unknown	Suppressor Current	50 mA
Control Program:	Anion Dx-500	Flow Rate:	2.00
Quantif. Method:	ANION TEST-new	Dilution Factor:	5.0000
Recording Time:	6/4/2012 14:37	Sequence:	04Jun12
Run Time (min):	6.00	Column	AS4A



No.	Ret.Time min	Peak Name	Amount ppm	Area μS*min	Height μS	Reported Value ppm
1	1.29	Chloride	28.9267	0.55764	9.07443	29.9 ✓
2	2.42	Nitrate	0.6779	0.02792	0.26641	
3	4.77	Sulfate	10.0302	0.13798	0.50956	

25 1205011-11-5x-MS

WO1205011	Dimock Residential Groundwater	Suppressor:	SRS
Sample Name:	1205011-11-5x-MS	Injection Volume:	20.0
Vial Number:	25	Channel:	ECD_1
Sample Type:	unknown	Suppressor Current	50 mA
Control Program:	Anion Dx-500	Flow Rate:	2.00
Quantif. Method:	ANION TEST-new	Dilution Factor:	5.0000
Recording Time:	6/4/2012 14:45	Sequence:	04Jun12
Run Time (min):	6.00	Column	AS4A



No.	Ret. Time min	Peak Name	Amount ppm	Area $\mu\text{S} \cdot \text{min}$	Height μS	Reported Value ppm
1	0.93	Fluoride	4.7955	0.15688	2.59247	
2	1.29	Chloride	40.9421	0.81494	13.45636	40.9 ✓
3	1.49	Nitrite	2.2834	0.08446	1.24113	
4	2.12	Bromide	24.5736	0.19495	2.22581	
5	2.38	Nitrate	7.9830	0.36985	3.49161	
6	3.53	Phosphate	12.0264	0.20378	0.92924	
7	4.76	Sulfate	34.6892	0.48661	1.81807	

See next page for data tabulation

Spike Recovery Calculation for 1205011-11

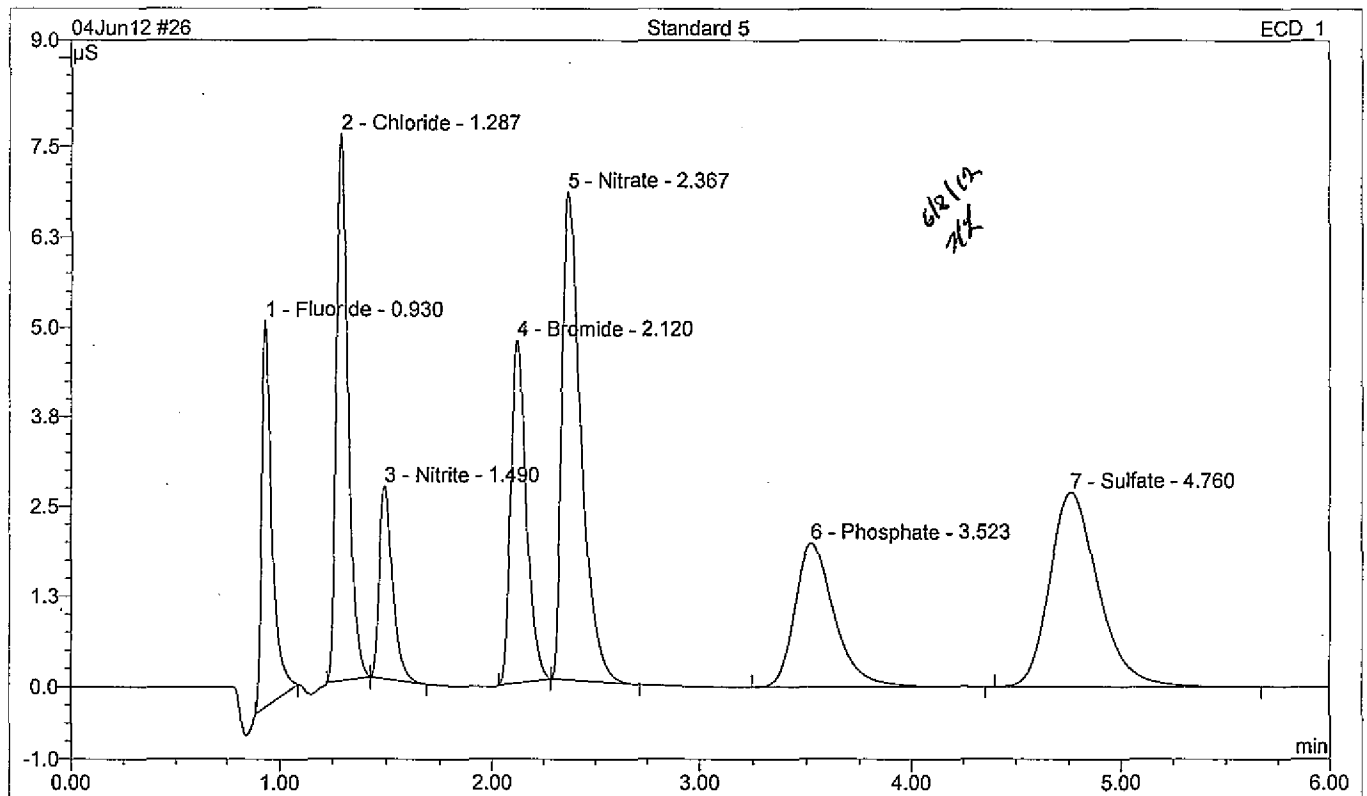
WO1205011 Dimock Residential Groundwater

Anion	Spiked Result mg/L	Reported Result mg/L	Spike Conc. mg/L	% Recovery
Chloride	40.9 ✓	28.0	12.5	103 ✓

6/8/12
H

26 Standard 5

WO1205011	Dimock Residential Groundwater	Suppressor:	SRS
Sample Name:	Standard 5	Injection Volume:	20.0
Vial Number:	26	Channel:	ECD_1
Sample Type:	unknown	Suppressor Current	50 mA
Control Program:	Anion Dx-500	Flow Rate:	2.00
Quantif. Method:	ANION TEST-new	Dilution Factor:	1.0000
Recording Time:	6/4/2012 14:54	Sequence:	04Jun12
Run Time (min):	6.00	Column	AS4A



No.	Ret. Time min	Peak Name	Amount ppm	Area $\mu\text{S} \cdot \text{min}$	Height μS	Reported Value ppm
1	0.93	Fluoride	1.9945	0.30585	5.38699	1.99 ✓
2	1.29	Chloride	5.0703	0.48398	7.59952	5.07 ✓
3	1.49	Nitrite	1.0111	0.19098	2.67186	1.01
4	2.12	Bromide	10.1066	0.41408	4.77390	10.1 ✓
5	2.37	Nitrate	3.0373	0.72680	6.77609	3.04
6	3.52	Phosphate	4.9727	0.42847	1.98235	4.97
7	4.76	Sulfate	10.1381	0.71960	2.69432	10.1 ✓

See next page for data tabulation

Standard 5 Data Compilation

WO1205011 Dimock Residential Groundwater

Peak Name	Amount mg/L	Area	Height	%C	%A	95% CI
Fluoride	1.9945	0.3059	5.3870	100 ✓	100	1.80-2.20
Chloride	5.0703	0.4840	7.5995	101 ✓	102	4.50-5.50
Nitrite	1.0111	0.1910	2.6719	101	101	0.900-1.10
Bromide	10.1066	0.4141	4.7739	101 ✓	101	9.00-11.0
Nitrate	3.0373	0.7268	6.7761	101	101	2.70-3.30
Phosphate	4.9727	0.4285	1.9824	99	99	4.50-5.50
Sulfate	10.1381	0.7196	2.6943	101 ✓	101	9.00-11.0

4/21/12
AK

default-revised-anions/Standard 5-CS

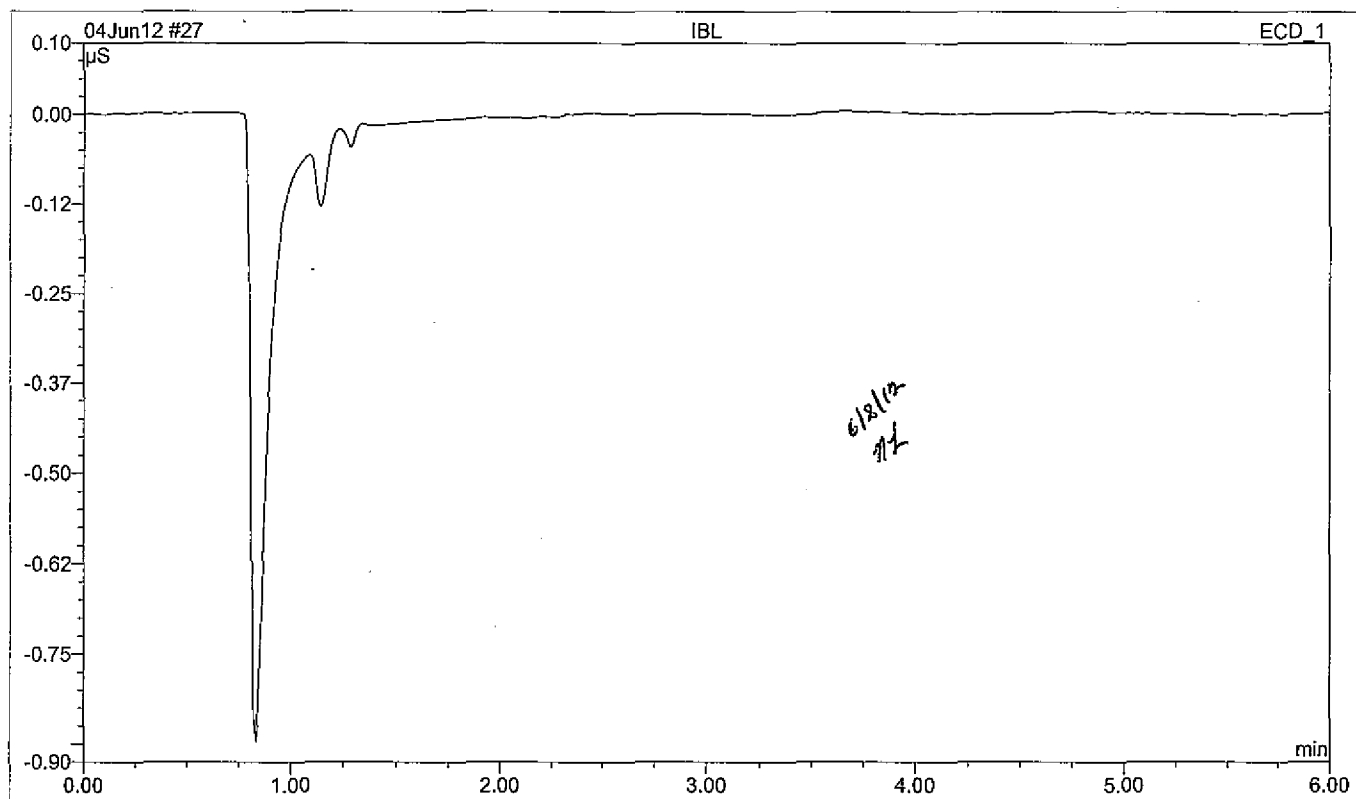
Chromeleon (c) Dionex 1996-2001
Version 6.80 SR9b Build 2682 (164470)

DIM0205729

DIM0205786

27 IBL

WO1205011	Dimock Residential Groundwater	Suppressor:	SRS
Sample Name:	IBL	Injection Volume:	20.0
Vial Number:	27	Channel:	ECD_1
Sample Type:	unknown	Suppressor Current	50 mA
Control Program:	Anion Dx-500	Flow Rate:	2.00
Quantif. Method:	ANION TEST-new	Dilution Factor:	1.0000
Recording Time:	6/4/2012 15:11	Sequence:	04Jun12
Run Time (min):	6.00	Column	AS4A



No.	Ret. Time min	Peak Name	Amount ppm	Area μS*min	Height μS.	Reported Value ppm
-----	------------------	-----------	---------------	----------------	---------------	-----------------------

Fluoride - <0.10 ppm ✓
 Chloride - <0.25 ppm ✓
 Nitrate - <0.50 ppm ✓
 Bromide - <0.50 ppm ✓
 Nitrate - <0.50 ppm ✓
 Phosphate - <0.50 ppm ✓
 Sulfate - <0.50 ppm ✓

default-revised-anions/Integration-New

 Chromeleon (c) Dionex 1996-2001
 Version 6.80 SR9b Build 2682 (164470)

ANIONS

CALIBRATION

DATA

Calibration Data**Sequence 04Jun12**

WO1205011 Dimock Residential Groundwater

Name	InjectionTime	Ret Time min Fluoride ECD_1	Area μS*min Fluoride ECD_1	Height μS Fluoride ECD_1	Amount mg/L Fluoride ECD_1
Standard 1	6/4/2012 10:52	0.93	0.038	0.406	0.1042
Standard 2	6/4/2012 11:00	0.93	0.049	0.628	0.1877
Standard 3	6/4/2012 11:09	0.93	0.080	1.157	0.4091
Standard 4	6/4/2012 11:17	0.93	0.163	2.677	1.0000
Standard 5	6/4/2012 11:26	0.93	0.307	5.390	1.9990 ✓
Standard 6	6/4/2012 11:34	0.92	0.929	16.798	6.0001

6/8/12
dk

Name	InjectionTime	Ret Time min Chloride ECD_1	Area μS*min Chloride ECD_1	Height μS Chloride ECD_1	Amount mg/L Chloride ECD_1
Standard 1	6/4/2012 10:52	1.28	0.021	0.319	0.2411
Standard 2	6/4/2012 11:00	1.28	0.043	0.661	0.4865
Standard 3	6/4/2012 11:09	1.29	0.092	1.416	1.0172
Standard 4	6/4/2012 11:17	1.29	0.232	3.625	2.5160
Standard 5	6/4/2012 11:26	1.29	0.476	7.509	4.9886 ✓
Standard 6	6/4/2012 11:34	1.29	1.626	24.394	15.0006

Name	InjectionTime	Ret Time min Nitrite ECD_1	Area μS*min Nitrite ECD_1	Height μS Nitrite ECD_1	Amount mg/L Nitrite ECD_1
Standard 1	6/4/2012 10:52	1.49	0.009	0.128	0.0534
Standard 2	6/4/2012 11:00	1.49	0.018	0.252	0.1010
Standard 3	6/4/2012 11:09	1.49	0.036	0.501	0.1978
Standard 4	6/4/2012 11:17	1.49	0.092	1.282	0.4945
Standard 5	6/4/2012 11:26	1.49	0.190	2.654	1.0035
Standard 6	6/4/2012 11:34	1.49	0.603	8.395	2.9998

Name	InjectionTime	Ret Time min Bromide ECD_1	Area μS*min Bromide ECD_1	Height μS Bromide ECD_1	Amount mg/L Bromide ECD_1
Standard 1	6/4/2012 10:52	2.15	0.019	0.213	0.5293
Standard 2	6/4/2012 11:00	2.14	0.038	0.424	1.0078
Standard 3	6/4/2012 11:09	2.14	0.077	0.858	1.9866
Standard 4	6/4/2012 11:17	2.14	0.196	2.218	4.9453
Standard 5	6/4/2012 11:26	2.13	0.411	4.724	10.0329 ✓
Standard 6	6/4/2012 11:34	2.11	1.365	16.411	29.9982

Name	InjectionTime	Ret Time min Nitrate ECD_1	Area $\mu\text{S} \cdot \text{min}$ Nitrate ECD_1	Height μS Nitrate ECD_1	Amount mg/L Nitrate ECD_1
Standard 1	6/4/2012 10:52	2.43	0.034	0.321	0.1617
Standard 2	6/4/2012 11:00	2.42	0.067	0.630	0.3058
Standard 3	6/4/2012 11:09	2.42	0.132	1.251	0.5898
Standard 4	6/4/2012 11:17	2.40	0.342	3.206	1.4811
Standard 5	6/4/2012 11:26	2.38	0.720	6.679	3.0122
Standard 6	6/4/2012 11:34	2.33	2.413	21.350	8.9993

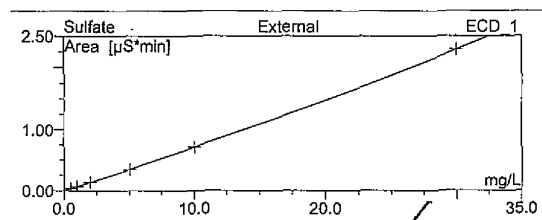
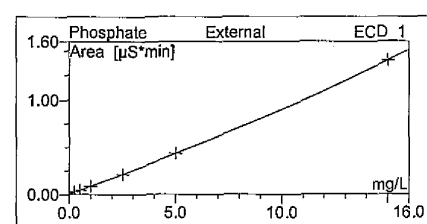
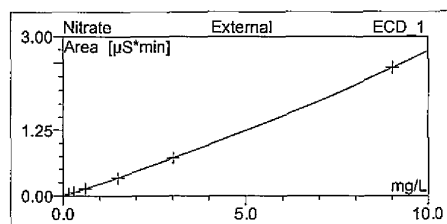
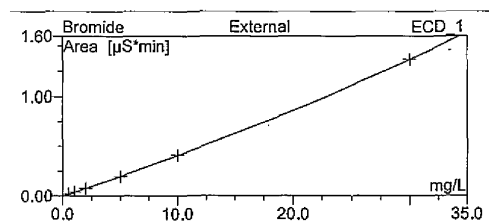
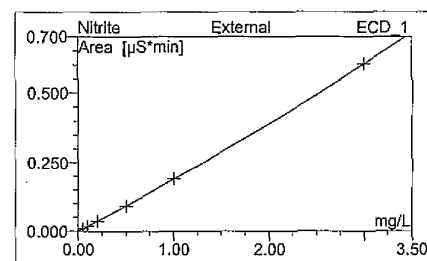
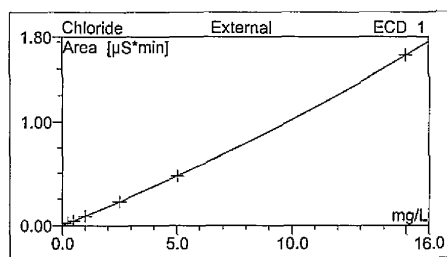
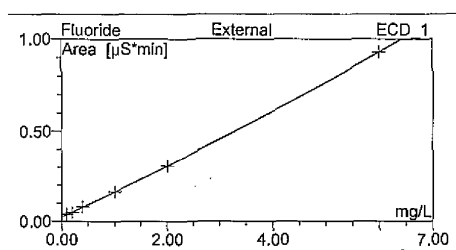
Name	InjectionTime	Ret Time min Phosphate ECD_1	Area $\mu\text{S} \cdot \text{min}$ Phosphate ECD_1	Height μS Phosphate ECD_1	Amount mg/L Phosphate ECD_1
Standard 1	6/4/2012 10:52	3.54	0.025	0.100	0.2793
Standard 2	6/4/2012 11:00	3.53	0.043	0.184	0.4884
Standard 3	6/4/2012 11:09	3.53	0.084	0.371	0.9872
Standard 4	6/4/2012 11:17	3.53	0.210	0.951	2.4826
Standard 5	6/4/2012 11:26	3.52	0.432	1.981	5.0133
Standard 6	6/4/2012 11:34	3.49	1.404	6.492	14.9992

Name	InjectionTime	Ret Time min Sulfate ECD_1	Area $\mu\text{S} \cdot \text{min}$ Sulfate ECD_1	Height μS Sulfate ECD_1	Amount mg/L Sulfate ECD_1
Standard 1	6/4/2012 10:52	4.77	0.034	0.128	0.4948
Standard 2	6/4/2012 11:00	4.76	0.068	0.253	0.9931
Standard 3	6/4/2012 11:09	4.77	0.140	0.511	2.0283
Standard 4	6/4/2012 11:17	4.76	0.346	1.292	4.9756
Standard 5	6/4/2012 11:26	4.76	0.710	2.655	10.0085 ✓
Standard 6	6/4/2012 11:34	4.72	2.285	8.567	29.9996

CALIBRATION PLOTS

Sequence 04Jun12

WO1205011 Dimock Residential Groundwater

Calibration Type QOff

default-revised-anions/Calibration-Plot

6/8/12
HLChromeleon (c) Dionex 1996-2001
Version 6.80 SR9b Build 2682 (164470)

Anions

Sample and

Reagent

Preparation

Logsheets

Anions Standard Preparation Log for DX500 PNB21

Page No. 225

WO No. 1205011 Site Name GROUNDWATER Date 06/04/12 Method 300.0
 Program SUPERFUND Analyst RON ALTMAN Reviewer JOYNTCH SOP R3-QA108
 Balance Log No. SNB23 Pipet Calibration Log No. SNB22 Certificate of Analysis Log No. SNB 20

ID	Standard	Source	Lot No.	CHI M	Theoretical Weight/ Volume	Actual Weight/ Volume	Date Prepared	Expiration Date	Comments
Stock Mixed Anion	all of the anions below/1L						05/31/12	07/01/12	
F ⁻	NaF	Fisher	880369	0607	0.4420 g	0.4437g			
Cl ⁻	NaCl	Fisher	G25729	0214	0.8242 g	0.8251g			
NO ₂ ⁻	NaNO ₂	Fisher	916644A	0734	0.4926 g	0.4949g			
Br ⁻	KBr	Sigma	120K0047	4830	1.4892 g	1.4902g			
NO ₃ ⁻	KNO ₃	Fisher	916724	0693	2.1660 g	2.1689g			
PO ₄ ⁻³	KH ₂ PO ₄	Fisher	915430	0733	2.1968 g	2.1995g			
SO ₄ ⁻²	Na ₂ SO ₄	Fisher	854742	0695	1.4790 g	1.4802g			
Standard 1	Stock Mixed Anion	Above			50 µL of stock	50 µL	06/04/12	preparation	
Standard 2	Stock Mixed Anion	Above			100 µL of stock	100 µL			
Standard 3	Stock Mixed Anion	Above			200 µL of stock	200 µL			
Standard 4	Stock Mixed Anion	Above			500 µL of stock	500 µL			
Standard 5	Stock Mixed Anion	Above			1000 µL of stock	1000 µL			
Standard 6	Stock Mixed Anion	Above			3000 µL of stock	3000 µL			
Custom Anion	Custom Anion	Wibby	B20120043	NA	1000 µL of SRM	1000 µL			

Anions Reagent Preparation Log for DX500 PNB21

Page No. 226

WO No. 1205011 Site Name DIMOCK RESIDENTIAL GROUNDWATER Date 05/04/12 Method 300.0
 Program SURFUND Analyst RON ALTMAN Reviewer RON ALTMAN SOP R3-QA108
 Balance Log No. SNB23 Pipet Calibration Log No. SNB22 Certificate of Analysis Log No. SNB 20

ID	Reagent	Source	Lot No.	CHIM	Theoretical Weight/ Volume	Actual Weight/ Volume	Date Prepared	Expiration Date	Comments
Eluent	Na ₂ CO ₃	Fisher	C38088	0212	0.382 g +	0.39239	05/01/12	07/01/12	
	NaHCO ₃	Fisher	C49336	0192	0.286g/2 L	0.2877	↓	L	

Reagent Purity Checked Y (Y/N)
 Resistivity of Milli-Q Water 18.2 MΩ-cm
 Milli-Q Maintenance Log No. SNB32

Anions Sample Preparation Log PNB95

WO No. 1205011 Site Name DIMOCK RESIDENTIAL GROUNDWATER Date 06/04/12 Method 300.0
 Program SURFANA Analyst RON ALTMAN Reviewer NORMAN KATSE SOP R3-QA108.3
 Certificate of Analysis Log Book No. 20

Matrix water

Sample ID	Tag No.	Sample pH	Sample Filtered	Sample Dilution	Comments
BLK	NA	7.7	N	None	
BS	↓				
1205011-01	7.7				
1205011-02					
1205011-03					
1205011-04					
1205011-05					
1205011-06					
1205011-07					
1205011-08					
1205011-09					
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1205011-11-97					
1205011-11-98					
1205011-11-99					
1205011-11-100					

Certificates of Analyses



6390 Joyce Drive
#100
Golden, CO 80403

PHONE 303-940-0033
FAX 303-940-0043
www.wibby.com

Dimock

Custom Anions

Lot #B20120043

NELAC Analyte Code	Analyte	Certified Value mg/L
2000	Sulfate	1000
1540	Bromide	1000
1870	Phosphate as P	620
1575	Chloride	500
1810	Nitrate as N	300
1730	Fluoride	200
1840	Nitrite as N	100

Certified Values = "100% true concentration" of each analyte as determined from gravimetric and volumetric measurements made during standard manufacture.

Solvent = Deionized Water

Expiration Date: 02/13

Analyte Source: NaBr

Store at 4°C.

NaCl

NaF

KNO₃

NaNO₂

Na₂SO₄

Na₂HPO₄

Prepared by: AWK

Reviewed By: THG

Date: 01/12

Date: 01/12

On-Demand Data Checklist For
NITRATE (NO₃) AND NITRITE (NO₂) AS N
 NO₂ ☐ NO₃ ☐ NO₂ + NO₃ ☒
Technical Review Checklist (TRC)
For Internal Use Only

Site Name: Dimock Residential Groundwater WO#: 1205011
 Analyst: J. Curry Date given to Reviewer: 6/7/12
 Matrix (circle): Solid / Aqueous / Other _____
 Program (circle): Superfund / RCRA / WPD (NPDES) / SDWA / Other: OSWER - Emergency Response
 Reference Method or Procedure used in Analysis: QuikChem Method 10-107-04-1-C based on EPA 353.2

This is a special request which falls outside OASQA's routine laboratory protocols. Therefore, these samples were analyzed and the quality control (QC) was evaluated based on the "On Demand" criteria. These protocols include all the QC checks as per routine analyses plus special verification of the performance of the analytical method at the reported quantitation limit/s. These protocols are specified in the EPA Region III OASQA Laboratory Quality Manual, current version. A written procedure or reference must be available for the method being performed and referenced in the narrative. If the method to be performed is unique, the procedures must be fully documented.

The signature below indicates the following:

- This data meets the needs of the customer according to the request.
- The analysis was performed as per the indicated Method, or exceptions documented.
- All documentation needed to recreate the analyses has been reviewed.
- Data Review status set to Peer Reviewed in Element.

Peer Reviewer signature [Signature] Date accepted 6/7/12

If any data for this case is stored with another case file, give Site Name and WO# _____

Peer Reviewer Completes Section Below:

General:

Raw data is identified with sample IDs, site name, WO#, analyst name, date of analysis.

YES NO N/A Comments

✓ _____

All logbooks completed, reviewed and copies present in report? _____

✓ _____

Copies of certificates present for standards? _____

✓ _____

Quality Control:

Raw data present; including dilution factors, units, and corrections factors for solids?

✓ _____

All requested samples reported & DQO's met? _____

✓ _____

Were samples analyzed within the 48 hour holding time for unpreserved or 28 days preserved? _____

✓ _____

Were NO₂ or NO₃ sample preserved at 4°C ± 2°C? = < 6°C - see bench sheet

✓ _____

2 Bench sheet says < 6°C
• need incoming report

Were NO₂+NO₃ samples preserved with acid? _____

✓ _____

Sample results within calibration range? _____

✓ _____

Calibration Curve: Correlation Coefficient ≥ 0.995 ? ☒

Are points from the curve omitted following the instrument Calibration Evaluation Policy? ☒

Column Check $\pm 20\%$ of TV = 3.0 mg/L ☒

CCV: Recovery $\pm 10\%$ of corresponding CLM conc.? ☒

BLK: < Reporting Limit? ☒

Secondary Source (High) BS: Recovery 85 - 115%? ☒

Secondary Source (Low) LCV/BS: Recovery 70 - 130%? ☒

MS: Recovery 85 - 115%? ☒

DUP: RPD $\leq 20\%$? ☒

Calculations/Report:

At least 10% Calculations and transcriptions checked. ☒

Element Draft Report reviewed. ☒

Deviations and problems documented. ☒

Additional Comments by Peer Reviewer:

Analyst Ensures that the Data Case File is Complete and Accurate:

- ☒ Bench sheet or Work Order list
- ☒ Sample Prep logs
- ☒ Instrument run log
- ☒ Standard/Reagent Prep log

- ☒ Appropriate TV sheets / Certificates of Analysis
- ☒ Element Peer Review report
- ☒ Raw data
- ☒ Data status set to analyzed

Additional Comments by Analyst on data issues:



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 3 Environmental Science Center
Office of Analytical Services and Quality Assurance
701 Maple Road
Fort Meade, Maryland 20755-5350



Report Narrative

SVOAs Analysis Note:

All samples were extracted by EPA SW-846 Method 3520C followed by analysis using EPA SW-846 Method 8270D. Refer to notes in case file for additional information regarding the analysis.

For this project one additional compound is added to the SVOC analysis; 1-methylnaphthalene. This is a non-routine analysis. All current in-house quality control limits were met.

For all samples, quantitation limits for 2,4-dinitrophenol are rejected qualified "R" due to zero percent recovery in the low-spike quality control check (BS1) and less than 10% recovery in the mid-level spike quality control check (BS2). For all samples 4,6-dinitro-2-methylphenol and pentachlorophenol had less than 10% recovery in the low-spike quality control check (BS1) but within acceptance limits in the mid-level spike quality control check (BS2); therefore, quantitation limits are raised to the mid-level value. In the report, only 21 compounds are reported for blank spike quality control check samples. Quality control information about the additional spiked compounds is available in the case file.

Results for a limited number of compounds found in all samples have been qualified "B" because of contamination found in either the method blank, field blank, or equipment blank.

Glycols by HPLC/MS/MS Note:

Samples were analyzed for diethylene glycol (DiG) (CAS# 111-46-6), triethylene glycol (TriG) (112-27-6), tetraethylene glycol (TeG) (112-60-7), 2-butoxyethanol (2-Bu) (111-76-2) and 2-methoxyethanol (2-Me)(109-86-4) by HPLC/MS/MS (inst id: TQD-LCMSMS) on a Waters Atlantis dC18 3um 2.1 x 150mm column (s/n- 0141301481).

An HPLC/MS/MS method does not currently exist for these analytes. SOP R3QA239 is in preparation. ASTM D 7731-11 and EPA SW-846 Methods 8000C and 8321 were followed for method development and QA/QC limits where applicable. All applicable OASQA On Demand QA/QC protocols were followed. All QC were within criteria.

The aqueous samples were injected without extraction onto the HPLC/MS/MS system.

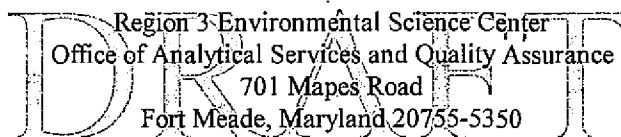
Refer to notes in the case file for additional information regarding the analysis.

Nitrite/Nitrate Analysis Note:

Samples were run as an 'On-Demand' analysis..

Total Nitrogen Analysis Note:

Samples were run as an 'On-Demand' analysis..

**Site Name: Dimock Residential Groundwater****Project #: DAS R33989****ANALYTICAL REPORT FOR SAMPLES**

Station ID	Laboratory ID	Matrix	Date Sampled	Date Received
FB22	1205011-01	Water	05/22/12 11:58	05/23/12 12:22
HW64	1205011-02	Drinking Water	05/22/12 11:10	05/23/12 12:22
HW64-P	1205011-03	Drinking Water	05/22/12 11:40	05/23/12 12:22
FB23	1205011-08	Water	05/23/12 13:25	05/24/12 11:53
HW63z	1205011-09	Drinking Water	05/23/12 13:10	05/24/12 11:53
HW63	1205011-10	Drinking Water	05/23/12 13:09	05/24/12 11:53
HW62	1205011-11	Drinking Water	05/22/12 15:59	05/24/12 11:53



Site Name: Dimock Residential Groundwater

Project #: DAS R33989

Classical Chemistry Parameters

Analyte	Result	Flags/ Qualifiers	Quantitation Limit	Units	Dilution	Prepared	Analyzed	Method/SOP#
Lab ID:	1205011-01							
Station ID:	FB22							
Sample Matrix:	Water							
Collected:	05/22/2012							
Nitrite + Nitrate as N	U		0.050	mg/L	1	05/31/12	05/31/12 16:27	EPA 353.2

Classical Chemistry Parameters

Analyte	Result	Flags/ Qualifiers	Quantitation Limit	Units	Dilution	Prepared	Analyzed	Method/SOP#
Lab ID:	1205011-02							
Station ID:	HW64							
Sample Matrix:	Drinking Water							
Collected:	05/22/2012							
Nitrite + Nitrate as N	0.159		0.050	mg/L	1	05/31/12	05/31/12 16:28	EPA 353.2

Classical Chemistry Parameters

Analyte	Result	Flags/ Qualifiers	Quantitation Limit	Units	Dilution	Prepared	Analyzed	Method/SOP#
Lab ID:	1205011-03							
Station ID:	HW64-P							
Sample Matrix:	Drinking Water							
Collected:	05/22/2012							
Nitrite + Nitrate as N	0.161		0.050	mg/L	1	05/31/12	05/31/12 16:30	EPA 353.2



Site Name: Dimock Residential Groundwater

Project #: DAS R33989

Classical Chemistry Parameters

Analyte	Result	Flags/ Qualifiers	Quantitation Limit	Units	Dilution	Prepared	Analyzed	Method/SOP#
Lab ID:	1205011-08							
Station ID:	FB23							
Sample Matrix:	Water							
Collected:	05/23/2012							
Nitrite + Nitrate as N	U		0.050	mg/L	1	05/31/12	05/31/12 16:33	EPA 353.2

Classical Chemistry Parameters

Analyte	Result	Flags/ Qualifiers	Quantitation Limit	Units	Dilution	Prepared	Analyzed	Method/SOP#
Lab ID:	1205011-09							
Station ID:	HW63z							
Sample Matrix:	Drinking Water							
Collected:	05/23/2012							
Nitrite + Nitrate as N	U		0.050	mg/L	1	05/31/12	05/31/12 16:34	EPA 353.2

Classical Chemistry Parameters

Analyte	Result	Flags/ Qualifiers	Quantitation Limit	Units	Dilution	Prepared	Analyzed	Method/SOP#
Lab ID:	1205011-10							
Station ID:	HW63							
Sample Matrix:	Drinking Water							
Collected:	05/23/2012							
Nitrite + Nitrate as N	U		0.050	mg/L	1	05/31/12	05/31/12 16:35	EPA 353.2



Site Name: Dimock Residential Groundwater

Project #: DAS R33989

Classical Chemistry Parameters

Analyte	Result	Flags/ Qualifiers	Quantitation Limit	Units	Dilution	Prepared	Analyzed	Method/SOP#
Lab ID:	1205011-11							
Station ID:	HW62							
Sample Matrix:	Drinking Water							
Collected:	05/22/2012							
Nitrite + Nitrate as N	0.627		0.050	mg/L	I	05/31/12	05/31/12 16:36	EPA 353.2



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 3 Environmental Science Center
Office of Analytical Services and Quality Assurance
701 Mapes Road
Fort Meade, Maryland 20755-5350



Site Name: Dimock Residential Groundwater

Project #: DAS R33989

QC Data
Classical Chemistry Parameters

Analyte	Result	Quantitation Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BE23101 - Nutrient Prep										
Blank (BE23101-BLK1)				Prepared: 05/31/12 11:02		Analyzed: 05/31/12 16:22				
Nitrite + Nitrate as N	U	0.050	mg/L							
LCS (BE23101-BS1)				Prepared: 05/31/12 11:02		Analyzed: 05/31/12 16:24				
Nitrite + Nitrate as N	3.095	0.050	mg/L	3.0000		103	85-115			
Duplicate (BE23101-DUP1)				Source: 1205011-02		Prepared: 05/31/12 11:02		Analyzed: 05/31/12 16:29		
Nitrite + Nitrate as N	0.165	0.050	mg/L		0.159			4	20	
MRL Check (BE23101-MRL1)				Prepared: 05/31/12 11:02		Analyzed: 05/31/12 16:26				
Nitrite + Nitrate as N	0.053	0.050	mg/L	0.050000		106	60-140			
Matrix Spike (BE23101-MS1)				Source: 1205011-03		Prepared: 05/31/12 11:02		Analyzed: 05/31/12 16:32		
Nitrite + Nitrate as N	1.197	0.050	mg/L	1.0000	0.161	104	85-115			



Site Name: Dimock Residential Groundwater

Project #: DAS R33989

Notes and Definitions

%REC Percent Recovery

RPD Relative Percent Difference

U Analyte included in the analysis, but not detected at or above the quantitation limit.

Quantitation Limit: The lowest concentration of an analyte that can be reliably measured within specified limits of precision and accuracy for a specific laboratory analytical method and that takes into account analytical adjustments made during sample preparation and analysis.

REPORTING PROTOCOL FOR SOLID SAMPLE RESULTS: Percent Solids (percent dry wt at 105 degrees C) determinations are routinely performed for most organic and inorganic analyses. Consequently, these samples are analyzed wet and converted to a dry weight result for reporting purposes. If metals and mercury analyses are requested, they are routinely prepared for analyses by an initial drying at 60 degrees C, homogenized prior to digestion, and are analyzed and reported on a dry weight basis. Oil-type samples are analyzed and reported on a wet weight basis for all analyses because of the nature of the sample matrix. Any exceptions to this protocol will be noted in the narrative.

**Items for Project Manager Review**

LabNumber	Analysis	Analyte	Exception
	Nitrite+Nitrate as Nitrogen by (Water)		Special Units: (mg/L)
1205011-01	Nitrite+Nitrate as Nitrogen by		Status is Analyzed
1205011-02	Nitrite+Nitrate as Nitrogen by		Status is Analyzed
1205011-03	Nitrite+Nitrate as Nitrogen by		Status is Analyzed
1205011-08	Nitrite+Nitrate as Nitrogen by		Status is Analyzed
1205011-09	Nitrite+Nitrate as Nitrogen by		Status is Analyzed
1205011-10	Nitrite+Nitrate as Nitrogen by		Status is Analyzed
1205011-11	Nitrite+Nitrate as Nitrogen by		Status is Analyzed

Original Run Filename: OM_5-31-2012_04-14-02AM.OMN created 5/31/2012 4:14:02 AM
 Original Run Author's Signature: [Administrator]
 Current Run Filename: OM_5-31-2012_04-14-02AM.OMN last modified 5/31/2012 4:40:28 AM
 Current Run Author's Signature: [Administrator]
 Description: 10-107-04-1-C

WD 1205011 Dimack Residential Groundwater

Sample	Rep.	Cup No.	Channel 3 NO3 + NO2			Detection Time	ADF	MDF
			Conc. (mg N/L)	Area (Vs)	Height (V)			
CLM 1	1	S1	5.0000	45.6392	4.7429	5/31/2012@4:15:00 AM		
CLM 2	1	S2	3.0000	27.9778	3.0011	5/31/2012@4:16:12 AM		
CLM 3	1	S3	1.0000	9.5714	1.0362	5/31/2012@4:17:25 AM		
CLM 4	1	S4	0.5000	4.6331	0.4974	5/31/2012@4:18:37 AM		
CLM 5	1	S5	0.1000	0.9136	0.0972	5/31/2012@4:19:51 AM		
CLM 6	1	S6	0.0500	0.4746	0.0508	5/31/2012@4:21:04 AM		
BE23101-BLK1	1	S8	<0.0164	-0.0023	-0.0010	5/31/2012@4:22:19 AM		
Calibration: Table/Fig. 1								
COL CHK NO2	1	1	3.3154	30.4919	3.2777	5/31/2012@4:23:33 AM		
BE23101-BS1	1	2	3.0950	28.4753	3.0728	5/31/2012@4:24:46 AM		
BE23101-MRL1	1	3	0.0529	0.6318	0.0673	5/31/2012@4:26:00 AM		
1205011-01	1	4	0.0060	0.0927	0.0086	5/31/2012@4:27:13 AM		
1205011-02	1	5	0.1592	1.6054	0.1732	5/31/2012@4:28:26 AM		
BE23101-DUP1	1	6	0.1652	1.6603	0.1792	5/31/2012@4:29:39 AM		
1205011-03	1	7	0.1610	1.6214	0.1751	5/31/2012@4:30:52 AM		
BE23101-MS1	1	8	1.1969	11.1030	1.2197	5/31/2012@4:32:05 AM		
Spike Level:			1.0000					
1205011-08	1	9	0.0091	0.0643	0.0066	5/31/2012@4:33:17 AM		
1205011-09	1	10	0.0319	0.4397	0.0453	5/31/2012@4:34:30 AM		
1205011-10	1	11	0.0313	0.4342	0.0464	5/31/2012@4:35:43 AM		
1205011-11	1	12	0.6267	5.8840	0.6437	5/31/2012@4:36:54 AM		
BE23101-CCV1	1	S3	1.0462	9.7229	1.0556	5/31/2012@4:38:07 AM		
Known Conc:			1.0000					
BE23101-BLK2	1	S8	-0.0153	0.0082	2.6125e-4	5/31/2012@4:39:22 AM		

TV = 3.0 110% Rec

Analyte Properties Table for OM_5-31-2012_04-14-02AM.OMN

Property	Channel 3 NO3 + NO2
Concentration Units	mg N/L
Calibration Fit Type	First Order
Clear Calibration	True
Force Through Zero	False
Calibration Weighting	None
Auto Dilution Trigger	False
% of High Standard	110
Quik Chem Method	
Chemistry	Direct/Bipolar
Calibration by Height	False
Inject to Peak Start	9
Peak Base Width	57

pk 6/3/12
-1-

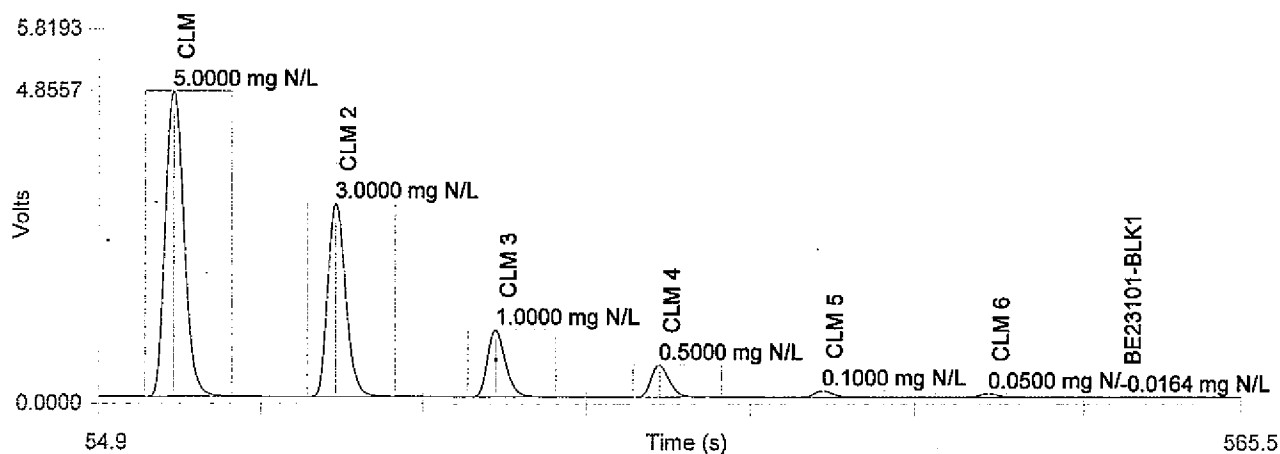
1. What is the purpose of the study?

[illegible]

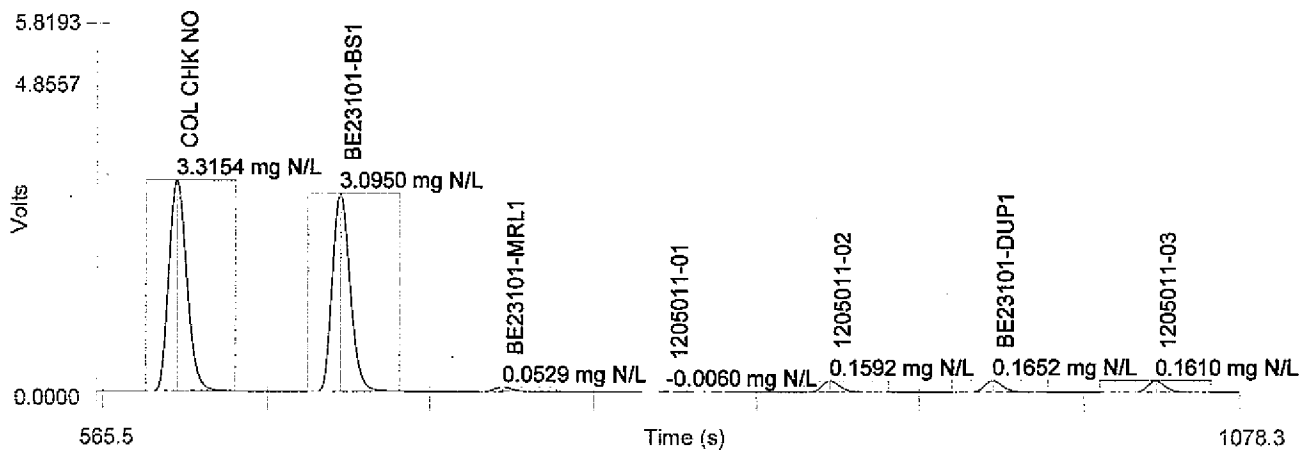
Year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099
1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	

Channel 3: Set 1 of 3

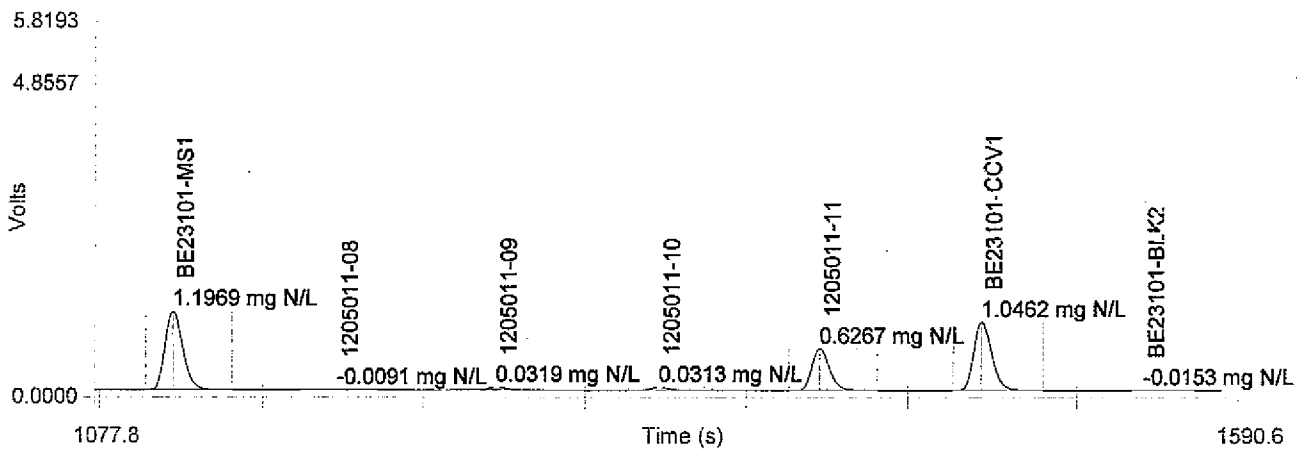
W01205011 Dimock Residential Groundwater



Channel 3: Set 2 of 3



Channel 3: Set 3 of 3

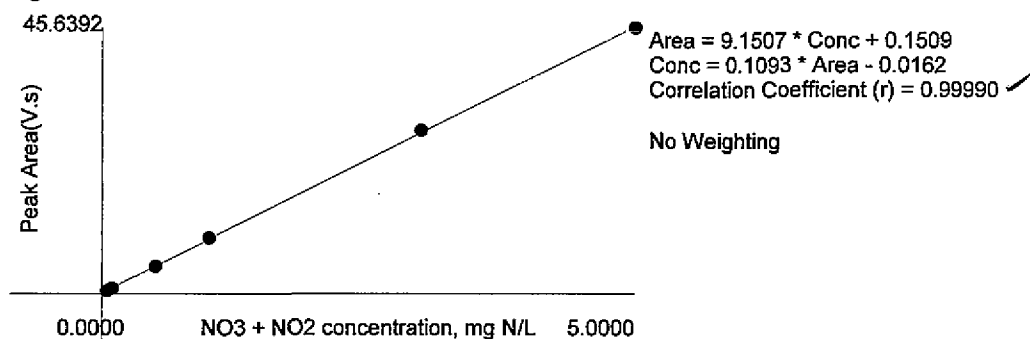


John
-2- 6/7/12

Table 1: NO3 + NO2 *WO 1205011 Dimock Residential Ground Water*

	Conc. (mg N/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	5.0000	1	45.6392	4.7429	0.6	5/31/2012	4:16:05 AM
2	3.0000	1	27.9778	3.0011	-1.4	5/31/2012	4:17:17 AM
3	1.0000	1	9.5714	1.0362	-2.9	5/31/2012	4:18:30 AM
4	0.5000	1	4.6331	0.4974	2.0	5/31/2012	4:19:43 AM
5	0.1000	1	0.9136	0.0972	14.3	5/31/2012	4:20:56 AM
6	0.0500	1	0.4746	0.0508	22.0	5/31/2012	4:22:10 AM

Figure 1: NO3 + NO2



pk
 -3-
 6/7/12

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EPA Region 3 - OASQA - NUTRIENTS SAMPLE PREPARATION LOG

BE23101

bch_Nutrients.rpt

Project: DAS R33989
Work Order No: 1205011
Site Name: Dimock Residential Groundwater
Analysis: Nitrite+Nitrate as Nitrogen by EPA 353.2 FIA
Matrix: Water

Location: EPA #3 Shelf 8B
Client: OSWER - Emergency Response
Account#: 2012T03N303DC6A3TARS00
Bench Sheet Prepared Date: 05/31/12 11:02

Analyst: J. Curry
DI Water Criteria: 18 (MΩ-cm) (Y) / N
Pipet Log#: SNB 49
Comments from WO: _____

Sample Prep date: 5/31/12 METHOD/SOP: EPA 353.2
Reagent Purity correct: (Y) / N
Balance Log: SNB 60 Temperature Log: SNB 47
Certificate of Analysis Log#: SNB 45

Date/Time of Analysis:	CCV Std #: <u>1200335</u>	Autoclave # Temp/Time in: <u>N/A</u>	Autoclave # Temp/Time out: <u>N/A</u>
Standard/Reagent Prep Log #: PNB 145	Vol Used (mL): <u>1.0 mL into 100 mL DI</u>	Hot Block # Temp/Time in: <u>N/A</u>	Hot Block # Temp/Time out: <u>N/A</u>
Maintenance Log #: SNB 227	Samples < 6°C: <u>(Y)</u> / N		

EPA Region 3 - OASQA - NUTRIENTS SAMPLE PREPARATION LOG

BE23101

bch_Nutrients.rpt

Surrogate used:

LabNumber	Cont ID	Sample Type	Sample filtered (y or n)	Initial (mL)	Final (mL)	pH < 2	pH Adjusted	Spike1	Spike1 Amount μ l	SourceID	ExtractionComments
1205011-01	C	SAM	NO	8	8	yes	Instrument Adjusted				11 Drinking Water
1205011-02	C	SAM		8	8						11 Drinking Water
1205011-03	C	SAM		8	8						11 Drinking Water
1205011-08	C	SAM		8	8						11 Drinking Water
1205011-09	C	SAM		8	8						11 Drinking Water
1205011-10	C	SAM		8	8						11 Drinking Water
1205011-11	C	SAM		8	8						11 Drinking Water
BE23101-BLK1				8	8					-	
BE23101-BS1				100	100			1200336	3000	-	
BE23101-DUP1				8	8					1205011-02	
BE23101-MRL1				100	100			1200336	50	-	
BE23101-MS1				8	8			1200335	80	1205011-03	

Nitrite/Nitrate as N Standard/Reagent Preparation

Page:

Analyst: J. Curry

Date: 5/31/12

SOP Number: Quikchem 10-107-04-1-c

1000 mg/L Stock Standard Element ID: ERA <u>1100618</u> SPEX <u>1100619</u>								
Stock Solution	Element ID	Date Prepared	Expiration Date	Vendor	Stock Conc	Amount Used	Final Volume	Final Conc.
NO ₂ -N	N/A			ERA	1000 mg/L	10.0 mL	100 mL	100 mg/L
NO ₂ -N	N/A			SPEX	1000 mg/L	10.0 mL	100 mL	100 mg/L
NO ₃ -N	1200335	5/31/12	6/13/12	ERA	1000 mg/L	10.0 mL	100 mL	100 mg/L
NO ₃ -N	1200336	5/31/12	6/13/12	SPEX	1000 mg/L	10.0 mL	100 mL	100 mg/L

* Certificates of Analysis Logbook#: SNB225

Balance log book#: SNB60

Element ID of Stock Solution used <u>1200335</u>	Stock Conc.	Amount used (mL)	Final Volume	Final Concentration in mg NO ₃ -N/L
CLM 1	100 mg/L	5.0	100 mL	5.0
CLM 2	100 mg/L	3.0	100 mL	3.0
CLM 3	100 mg/L	1.0	100 mL	1.0
CLM 4	100 mg/L	0.5	100 mL	0.5
CLM 5	100 mg/L	0.1	100 mL	0.1
CLM 6	100 mg/L	0.05	100 mL	0.05

Reagent purity checked: YES or No

DI Water 18.2 Ω: YES or No

Reagent (Refer to method for preparation procedure information.)	Amount used (g)	Final Vol. (mL)	Prepared Date	Exp Date	Bar Code	Prepared By
Reagent #1 Sodium Hydroxide (NaOH)	N/A					
Reagent #2 Ammonium Chloride (NH ₄ Cl)	85.0369	1000	5/15/12	5/15/13	5619	pk
Disodium Ethylenediamine Tetraacetic Acid Dihydrate (Na ₂ EDTA·2H ₂ O)	0649 1.1599	1000	5/10/12		5685	
Reagent #3 Phosphoric Acid (H ₃ PO ₄)	100 mL				5693	pk
Sulfanilamide (C ₆ H ₅ N ₂ O ₂ S, 4-(NH ₂)C ₆ H ₄ SO ₂ NH ₂)	0364 40.484	1000	5/15/12	6/15/12	13903	
N-(1-naphthyl)ethylenediamine dihydrochloride (NED)	175 1.0484	1000			5690	

Comments: WO 1205011



A Waters Company

Certificate of Analysis

PRODUCT:	1000 mg/L Nitrate as N ($\text{NO}_3\text{-N}$)
CATALOG NUMBER:	052 -125 mL; 991 - 500 mL
LOT NUMBER:	180111
ISSUE DATE:	January 31, 2011
REVISION DATE:	Original
STARTING MATERIAL:	Potassium Nitrate (KNO_3)
CERTIFIED CONCENTRATION ¹ :	1000 mg/L
UNCERTAINTY ² :	0.4%
MATRIX:	18 megohm deionized water
DENSITY:	1.0032 \pm 0.0008 g/mL at 21.5°C and 776 mm Hg
TRACEABILITY ³ :	97.4%
NIST/SRM:	3185 Nitrate
VERIFICATION METHOD:	Ion Chromatography
STORAGE:	Store at 20-25°C

1. The Certified Concentration is the actual made-to concentration confirmed by ERA analytical verification.
2. The stated Uncertainty is the total propagated uncertainty at the 95% confidence interval. The uncertainty is based on the preparation of the product and includes uncertainty related to the starting material used and the volumetric and gravimetric measurements made. The method of calculating uncertainty is taken from the ISO Guide to the Expression of Uncertainty in Measurement (current version). The uncertainty applies to the product as supplied and does not take into account any required or optional dilutions and/or preparations the laboratory may perform while using this product.
3. Traceability Recovery = ((% Recovery certified standard)/(% Recovery NIST SRM))*100.

The traceability data shown were compiled by analyzing the ERA standards or their associated stock solutions against the applicable NIST SRMs.

This standard expires 1/2013. The certified values are monitored and purchasers will be notified of any significant changes resulting in recertification or withdrawal of this certified reference material during the period of validity of this certificate.

This product is intended to be used as either a calibration standard or a quality control check of the entire analytical process for the analytes/matrix included in the standard.

If you have any questions or need technical assistance, please call ERA technical assistance at 1-800-372-0122 or email to info@eraqc.com

Certifying Officer: XXXXXXXXXX

SPEXertificate®

Certificate of Reference Material



Reference Materials Producer
CERT #2495.01
Chemical Testing
CERT #2495.02

Catalog Number: AS-NO3N9-2X/2Y

Lot No. 2-78NO3N-2

Description: 1000 mg/L Nitrate- Nitrogen

Matrix: H₂O

This Ion Chromatography Certified Reference Material, CRM, is intended primarily for use as a calibration standard or quality control standard for ion chromatography instrumentation. It can be employed in USEPA, ASTM and other methods relevant to the certified properties listed below.

Certified Value: 1005 mg/L

Uncertainty Associated with Measurement: ±3 mg/L

Certified Value is Traceable to: 3185*

* - indicates NIST SRM † - indicates SPEX CertiPrep CRM (when NIST SRM is not available) ‡ - prepared gravimetrically

The CRM is prepared gravimetrically using high purity Sodium Nitrate, Lot# 04091C. The certified value listed is the average of values obtained by classical wet assay and ion chromatography analysis.

Refer to side 2 for details of measurement uncertainties.

Classical Wet Assay: 1004 mg/L

Method: Precipitate using Nitron Acetate. Filter, dry and weigh as C₂₀H₁₆N₄HNO₃

Instrumental Analysis by Ion Chromatography: 1005 mg/L

Uncertified Properties

Trace Ionic Impurities in the Actual Solution via IC Analysis:

Element	mg/L	Element	mg/L
Br ⁻	<0.2	NO ₂ ⁻	<0.2
Cl ⁻	<0.5	PO ₄ ⁻³	<0.3
F ⁻	<0.03	SO ₄ ⁻²	<0.2

Balances are calibrated regularly with weight sets traceable to NIST #32856, #32857 and others. This CRM is guaranteed stable and accurate to +/- 0.5% of the certified value. This includes uncertainty components due to preparation, homogeneity by the most precise method, short term and long term stability as well as transpiration loss. This guarantee is valid for a period of one year from the date of certification only when the material is kept tightly closed and stored under ambient laboratory conditions.

Date of Certification:

MAR - - 2011

Certifying Officer:



Report of Certification

This Certified Reference Material (CRM) has been prepared and certified under an ISO 9001:2000, ISO 17025:2005, and ISO Guide 34:2000 quality system consistent with the following quality standards:

- Guide To The Expression Of Uncertainty In Measurement 1997
- EURACHEM/CITAC Guide: Quantifying Uncertainty in Analytical Measurement – Second Edition
- ASTM Guide D6362-98
- NIST Technical Note 1297
- ISO 17025:2005: General Requirements for the Competence of Testing and Calibration Laboratories – Certified by A2LA
- ISO Guide 31:2000: Reference Materials – Contents of Certificates and Labels
- ISO Guide 34:2000: General Requirements for the Competence of Reference Material Producers – Certified by A2LA
- ILAC-G12-2000: Guidelines for the requirements for the competence of reference materials producers
- ISO/REMCO N280
- Compliant with 10CFR50, Appendix B as applied to Chemicals & Reagents (NRC)
- Compliant with 10CFR21, Reporting of Defects and Non-compliance (NRC)

Material Source:

All analytes and matrix materials are obtained and verified by SPEX CertiPrep from pre-qualified vendors as per ISO 9001:2000, ISO 17025:2005, and ISO Guide 34:2000 guidelines. Vendor identifications are proprietary, however sources of all materials used in the preparation and testing of SPEX CertiPrep CRMs are tracked and documented. For further assistance, please contact the Sales Support Department at crmsales@spexcsp.com.

Instructions for Use:

Primary usage of this CRM is in neat form or diluted serially with matrix of a purity at or greater than the purity of the original matrix solution. If dilution is required the diluent must be compatible with all certified analytes and contain stabilizers appropriate for the period of intended use. The CRM can also be used as a spike or with a spike, again with appropriate compatibility considerations. All solutions should be thoroughly mixed, by shaking, prior to use and never pipetted directly from the bottle. All surfaces that come in contact with the solution must be thoroughly cleaned and leached prior to use. Dilutions should be performed only with Class A volumetric glassware.

Method of Preparation:

Clean laboratory procedures and techniques have been used throughout the preparation. All materials, equipment, analytical instrumentation and personnel have been qualified prior to use. The highest purity acids applicable, 18 megohm, double deionized water, acid-leached triple-rinsed bottles (where appropriate), and Class A/calibrated volumetrics have been used in all preparations.

Homogeneity:

The homogeneity of the CRM has been confirmed by procedures consistent with ISO 17025:2005, ISO Guide 34:2000, and ASTM D6362-98 Appendix X2. Random, replicate samples of the final, packaged material have been analyzed to prove homogeneity in accordance with our internal procedure 4600-HOMOGEN-1A. This is consistent with the intended use of the CRM.

Statistical Estimator and Confidence Limits:

The certified value 'X' listed on the reverse of this document is at the 95% level of confidence and can be expressed as:

- $X = x \pm U$ where x =measured value, U =expanded uncertainty
 - $U = k u_c$ where $k=2$ is the coverage factor at the 95% confidence level
- U_c is obtained by combining the individual element standard uncertainty components u_i , and $u_c = \sqrt{\sum u_i^2}$

Certification Traveler Report:

All certified values reported were derived from the Traveler Report (SPEX CertiPrep's traceability documentation) identified by the lot number of this CRM. For further assistance, please contact the Sales Support Department at crmsales@spexcsp.com.

Legal Notice:

SPEX CertiPrep reference materials are not for any cosmetic, drug or household application and are to be used only by qualified individuals who are trained in appropriate procedures. No claims against SPEX CertiPrep, Inc. of any kind whatsoever, whether based on breach of warranty, alleged negligence, or otherwise, with respect to this Reference Material shall be greater than the purchase price. In no event shall SPEX CertiPrep, Inc. be liable for any loss of profits or any incidental, special, or consequential damages.

SPEX CertiPrep®

Your Science is Our Passion.™

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www.spexcsp.com • E-mail: crmsales@spexcsp.com
Phone: 1-800-LAB-SPEX • Fax: 732-603-9647



Total Dissolved Solids (TDS) Technical Review Checklist (TRC) Checklist

For Internal Use Only
SOP R3-QA105 -110811

Site Name: Dimock Residential Groundwater WO#: 1205011
Analyst: J. Curry Date given to Reviewer: 6/7/12
Matrix (circle): Solid / Aqueous / Other
Program (circle): Superfund / RCRA / WPD (NPDES) / SDWA / Other: OSWER - Emergency Response

The signature below indicates the following:

- This data meets the needs of the customer according to the request.
- The analysis was performed as per the SOP, or exceptions documented.
- All documentation needed to recreate the analyses has been reviewed.
- Data Review status set to Peer Reviewed in Element.

Peer Reviewer signature [Signature] Date accepted 6/7/12

If any data for this case is stored with another case file, give Site Name and WO# _____

Peer Reviewer Completes Section Below:

General:

	YES	NO	N/A	Comments
Raw data is identified with sample IDs, site name, WO#, analyst name, date of analysis.	<input checked="" type="checkbox"/>			
Is the NQL appropriate for the project DQOs? (<10 for 100 mls, <4 for 250 mls)	<input checked="" type="checkbox"/>			
Are the sample #s clearly identified and matched to the assignment sheet?	<input checked="" type="checkbox"/>			
Are technical holding times met? (7 Days from collection)	<input checked="" type="checkbox"/>			

Quality Control:

Was the analytical balance calibrated to bracket reported results?	<input checked="" type="checkbox"/>			
Are balance verifications acceptable?	<input checked="" type="checkbox"/>			
Were class one weights used in analysis?				
Was oven calibrated to 180° C? ($\pm 2^\circ$ C)	<input checked="" type="checkbox"/>			
Are all appropriate measures of precision and accuracy included at correct frequency and meets the required limits? (see limits below)	<input checked="" type="checkbox"/>			

Calculations/Report:

Calculations and transcriptions - at least 10% calculations checked.	<input checked="" type="checkbox"/>			
Element Draft Report reviewed.	<input checked="" type="checkbox"/>			
Deviations and problems documented.	<input checked="" type="checkbox"/>			
Is the raw data package complete, labeled, and legible with date and analyst signature?	<input checked="" type="checkbox"/>			
Are qualifier codes correctly applied, outliers flagged and corrective actions documented?	<input checked="" type="checkbox"/>			
Are sample preparation steps described with sufficient detail to recalculate data?	<input checked="" type="checkbox"/>			
Are three (3) significant figures reported?	<input checked="" type="checkbox"/>			
Is the report free of typographical and grammatical errors and does it follow the accepted format?	<input checked="" type="checkbox"/>			

Analyte	LCM % Recovery Limits	LD2 Precision Limits	LRB Method Blank	CLC	Avg of 3 weighings (if needed)
TDS	Use vendor limits	Abs. Difference: UWL = 15 mg/L UCL = 20 mg/L RPD < 20% 1 per 10 samples	Fails if \geq NQL and > 1/10th of sample	1 per 10 samples and at end	RSD \leq 25%

Additional Comments by Peer Reviewer:

Duplicate filed and is qualified.
SPS 6/13/12

Analyst Ensures that the Data Case File is Complete and Accurate as per SOP R3QA-066:

- | | |
|---|--|
| <input checked="" type="checkbox"/> Bench sheet or Work Order list | <input checked="" type="checkbox"/> Appropriate TV sheets / Certificates of Analysis |
| <input checked="" type="checkbox"/> Sample Prep logs | <input checked="" type="checkbox"/> Element Peer Review report |
| <input checked="" type="checkbox"/> Instrument run log <i>pk 6/13/12</i> | <input checked="" type="checkbox"/> Raw data |
| <input checked="" type="checkbox"/> Standard/Reagent Prep log <i>pk 6/13/12</i> | <input checked="" type="checkbox"/> Data status set to analyzed |

Additional Comments by Analyst on data issues:



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 3 Environmental Science Center
Office of Analytical Services and Quality Assurance
701 Maple Road
Fort Meade, Maryland 20755-5350



Report Narrative

SVOAs Analysis Note:

All samples were extracted by EPA SW-846 Method 3520C followed by analysis using EPA SW-846 Method 8270D. Refer to notes in case file for additional information regarding the analysis.

For this project one additional compound is added to the SVOC analysis; 1-methylnaphthalene. This is a non-routine analysis. All current in-house quality control limits were met.

For all samples, quantitation limits for 2,4-dinitrophenol are rejected qualified "R" due to zero percent recovery in the low-spike quality control check (BS1) and less than 10% recovery in the mid-level spike quality control check (BS2). For all samples 4,6-dinitro-2-methylphenol and pentachlorophenol had less than 10% recovery in the low-spike quality control check (BS1) but within acceptance limits in the mid-level spike quality control check (BS2); therefore, quantitation limits are raised to the mid-level value. In the report, only 21 compounds are reported for blank spike quality control check samples. Quality control information about the additional spiked compounds is available in the case file.

Results for a limited number of compounds found in all samples have been qualified "B" because of contamination found in either the method blank, field blank, or equipment blank.

Glycols by HPLC/MS/MS Note:

Samples were analyzed for diethylene glycol (DiG) (CAS# 111-46-6), triethylene glycol (TriG) (112-27-6), tetraethylene glycol (TeG) (112-60-7), 2-butoxyethanol (2-Bu) (111-76-2) and 2-methoxyethanol (2-Me)(109-86-4) by HPLC/MS/MS (inst id: TQD-LCMSMS) on a Waters Atlantis dC18 3um 2.1 x 150mm column (s/n- 0141301481).

An HPLC/MS/MS method does not currently exist for these analytes. SOP R3QA239 is in preparation. ASTM D 7731-11 and EPA SW-846 Methods 8000C and 8321 were followed for method development and QA/QC limits where applicable. All applicable OASQA On Demand QA/QC protocols were followed. All QC were within criteria.

The aqueous samples were injected without extraction onto the HPLC/MS/MS system.

Refer to notes in the case file for additional information regarding the analysis.

Nitrite/Nitrate Analysis Note:

Samples were run as an 'On-Demand' analysis..

Total Nitrogen Analysis Note:

Samples were run as an 'On-Demand' analysis..



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 3 Environmental Science Center
Office of Analytical Services and Quality Assurance
701 Mapes Road
Fort Meade, Maryland 20755-5350



Site Name: Dimock Residential Groundwater

Project #: DAS R33989

ANALYTICAL REPORT FOR SAMPLES

Station ID	Laboratory ID	Matrix	Date Sampled	Date Received
FB22	1205011-01	Water	05/22/12 11:58	05/23/12 12:22
HW64	1205011-02	Drinking Water	05/22/12 11:10	05/23/12 12:22
HW64-P	1205011-03	Drinking Water	05/22/12 11:40	05/23/12 12:22
FB23	1205011-08	Water	05/23/12 13:25	05/24/12 11:53
HW63z	1205011-09	Drinking Water	05/23/12 13:10	05/24/12 11:53
HW63	1205011-10	Drinking Water	05/23/12 13:09	05/24/12 11:53
HW62	1205011-11	Drinking Water	05/22/12 15:59	05/24/12 11:53



Site Name: Dimock Residential Groundwater

Project #: DAS R33989

Physical Parameters

Analyte	Result	Flags/ Qualifiers	Quantitation Limit	Units	Dilution	Prepared	Analyzed	Method/SOP#
Lab ID: 1205011-01 Station ID: FB22 Sample Matrix: Water Collected: 05/22/2012								
Total Dissolved Solids	U		10	mg/L	1	05/24/12	05/25/12 10:00	SM2540C/R3QA105

Physical Parameters

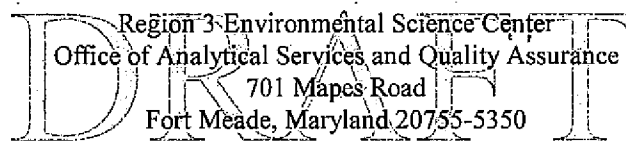
Analyte	Result	Flags/ Qualifiers	Quantitation Limit	Units	Dilution	Prepared	Analyzed	Method/SOP#
Lab ID: 1205011-02 Station ID: HW64 Sample Matrix: Drinking Water Collected: 05/22/2012								
Total Dissolved Solids	41	J	10	mg/L	1	05/24/12	05/25/12 10:00	SM2540C/R3QA105

Physical Parameters

Analyte	Result	Flags/ Qualifiers	Quantitation Limit	Units	Dilution	Prepared	Analyzed	Method/SOP#
Lab ID: 1205011-03 Station ID: HW64-P Sample Matrix: Drinking Water Collected: 05/22/2012								
Total Dissolved Solids	45		10	mg/L	1	05/24/12	05/25/12 10:00	SM2540C/R3QA105



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY



Region 3 Environmental Science Center
Office of Analytical Services and Quality Assurance
701 Mapes Road
Fort Meade, Maryland 20755-5350



Site Name: Dimock Residential Groundwater

Project #: DAS R33989

Physical Parameters

Analyte	Result	Flags/ Qualifiers	Quantitation Limit	Units	Dilution	Prepared	Analyzed	Method/SOP#
Lab ID:	1205011-08							
Station ID:	FB23							
Sample Matrix:	Water							
Collected:	05/23/2012							
Total Dissolved Solids	U		10	mg/L	1	05/24/12	05/25/12 10:00	SM2540C/R3QA105

Physical Parameters

Analyte	Result	Flags/ Qualifiers	Quantitation Limit	Units	Dilution	Prepared	Analyzed	Method/SOP#
Lab ID:	1205011-09							
Station ID:	HW63z							
Sample Matrix:	Drinking Water							
Collected:	05/23/2012							
Total Dissolved Solids	156		10	mg/L	1	05/24/12	05/25/12 10:00	SM2540C/R3QA105

Physical Parameters

Analyte	Result	Flags/ Qualifiers	Quantitation Limit	Units	Dilution	Prepared	Analyzed	Method/SOP#
Lab ID:	1205011-10							
Station ID:	HW63							
Sample Matrix:	Drinking Water							
Collected:	05/23/2012							
Total Dissolved Solids	159		10	mg/L	1	05/24/12	05/25/12 10:00	SM2540C/R3QA105



Site Name: Dimock Residential Groundwater

Project #: DAS R33989

Physical Parameters

Analyte	Result	Flags/ Qualifiers	Quantitation Limit	Units	Dilution	Prepared	Analyzed	Method/SOP#
Lab ID:	1205011-11							
Station ID:	HW62							
Sample Matrix:	Drinking Water							
Collected:	05/22/2012							
Total Dissolved Solids	123		10	mg/L	1	05/24/12	05/25/12 10:00	SM2540C/R3QA105



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 3 Environmental Science Center
Office of Analytical Services and Quality Assurance
701 Mapes Road
Fort Meade, Maryland 20755-5350



Site Name: Dimock Residential Groundwater

Project #: DAS R33989

QC Data
Physical Parameters

Analyte	Result	Quantitation Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------------	-------	----------------	------------------	------	----------------	-----	--------------	-------

Batch BE22405 - TDS/TSS prep**Blank (BE22405-BLK1)**

Prepared: 05/24/12 12:34 Analyzed: 05/25/12 10:00

Total Dissolved Solids U 10 mg/L

Duplicate (BE22405-DUP1)

Source: 1205011-02

Prepared: 05/24/12 12:34 Analyzed: 05/25/12 10:00

Total Dissolved Solids 51 10 mg/L 41 22 20 A

Reference (BE22405-SRM1)

Prepared: 05/24/12 12:34 Analyzed: 05/25/12 10:00

Total Dissolved Solids 246 mg/L 250.00 98 74-126

**Site Name: Dimock Residential Groundwater****Project #: DAS R33989**

Notes and Definitions

- J The identification of the analyte is acceptable; the reported value is an estimate.
- A Quality control value is outside acceptance limits.
- %REC Percent Recovery
- RPD Relative Percent Difference
- U Analyte included in the analysis, but not detected at or above the quantitation limit.

Quantitation Limit: The lowest concentration of an analyte that can be reliably measured within specified limits of precision and accuracy for a specific laboratory analytical method and that takes into account analytical adjustments made during sample preparation and analysis.

REPORTING PROTOCOL FOR SOLID SAMPLE RESULTS: Percent Solids (percent dry wt at 105 degrees C) determinations are routinely performed for most organic and inorganic analyses. Consequently, these samples are analyzed wet and converted to a dry weight result for reporting purposes. If metals and mercury analyses are requested, they are routinely prepared for analyses by an initial drying at 60 degrees C, homogenized prior to digestion, and are analyzed and reported on a dry weight basis. Oil-type samples are analyzed and reported on a wet weight basis for all analyses because of the nature of the sample matrix. Any exceptions to this protocol will be noted in the narrative.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 3 Environmental Science Center
Office of Analytical Services and Quality Assurance
701 Mapes Road
Fort Meade, Maryland 20755-5350



Items for Project Manager Review

LabNumber	Analysis	Analyte	Exception
	Total Dissolved Solids by 254 (Water)		Special Units: (mg/L)
1205011-01	Total Dissolved Solids by 254		Status is Analyzed
1205011-02	Total Dissolved Solids by 254		Status is Analyzed
1205011-03	Total Dissolved Solids by 254		Status is Analyzed
1205011-08	Total Dissolved Solids by 254		Status is Analyzed
1205011-09	Total Dissolved Solids by 254		Status is Analyzed
1205011-10	Total Dissolved Solids by 254		Status is Analyzed
1205011-11	Total Dissolved Solids by 254		Status is Analyzed
BE22405-DUPI	Total Dissolved Solids by 254	Total Dissolved Solids	Exceeds RPD control limit

EPA Region 3 - OASQA - TDS - SAMPLE PREPARATION/RUN LOG

BE22405 bch_TDS.rpt

Project: DAS R33989

Location: EPA #3 Shelf 8B

Work Order No: 1205011

Site Name: Dimock Residential Groundwater

Client: OSWER - Emergency Response

Analysis: Total Dissolved Solids by 2540C

Account#: 2012T03N303DC6A3TARS00

Matrix: Water

Comments from WO:

Analyst: J. CurrySOP: R3 QA-105SRM: EPA Lot#: 9199-506 TV: 250 Accept. Limits: 185-314 Cert. Log: SNB222DI H2O Source/ Log #: H105/SNB31Oven ID: X05H403 temp criteria: $104 \pm 2^\circ\text{C}$ Oven Reference Thermometer S/N: 387788Resistivity: 18.2Ω Oven ID: X05H403 temp criteria: $180 \pm 2^\circ\text{C}$ Oven Reference Thermometer S/N: 387788Balance ID: P119650 Weight Set ID: wt. criteria: $\pm 2\%$ for $<1 \text{ g}$ and $\pm 0.5\%$ for $\geq 1 \text{ g}$

Prep Date: <u>5/24/12</u>	Analyzed Date: <u>5/25/12</u> Date: <u>N/A</u>	CLC (1 per 10 samples and at end)
Wgt 1 True <u>50.0000</u> Observed Wgt <u>50.0001</u>	Wgt 1 True <u>50.0000</u> Observed Wgt <u>50.0001</u> / <u> </u>	CLC 1 True Wgt <u>50.0000</u> Observed Wgt <u>50.0002</u>
Wgt 2 True <u>75.0000</u> Observed Wgt <u>74.9999</u>	Wgt 2 True <u>75.0000</u> Observed Wgt <u>75.0001</u> / <u> </u>	CLC 2 True Wgt <u>50.0000</u> Observed Wgt <u>50.0002</u>
Wgt 3 True <u>100.0000</u> Observed Wgt <u>100.0003</u>	Wgt 3 True <u>100.0000</u> Observed Wgt <u>100.0001</u> / <u> </u>	CLC 3 True Wgt <u>50.0000</u> Observed Wgt <u>49.9999</u>

EPA Region 3 - OASQA - TDS - SAMPLE PREPARATION/RUN LOG

BE22405

bch_TDS.rpt

LabNumber ID	Cont ID	Sample Type	Dish ID	Dish Wt. (g) B	Sample Vol (mL) C	Dish wt. + Residue (g) A Date: 5/24/12/5/25/12 Time/temp In: 1550/105°C Time/temp Out: 1000/180°C	Dish wt. + Residue (g) A Date: 5/25/12 Time/temp In: 1210/180°C Time/temp Out: 1400/180°C	Dish wt. + Residue (g) A Date: N/A Time/temp In: Time/temp Out: ↓	Sample Result (mg/L) $\frac{(A-B) \times 1000 \times 1000}{C}$	SourceID
1205011-01	B	SAM	41	79.9134	100 mL	79.9132	79.9135	N/A	-2	
1205011-02	B	SAM	42	71.5544		71.5585	71.5591		41	
1205011-03	B	SAM	85	74.4238		74.4293	74.4299		45	
1205011-08	B	SAM	29	76.6330		76.6331	76.6336		1	
1205011-09	B	SAM	76	76.6705		76.6861	76.6868		156	
1205011-10	B	SAM	77	72.3576		72.3735	72.3751		159	
1205011-11	B	SAM	20	76.2042		76.2165	76.2162		123	
BE22405-BLK1			07	75.8564		75.8568	75.8581		4	
BE22405-DUP1			48	73.7248		73.7299	73.7306		51	1205011-02
BE22405-SRM			02	79.6822	↓	79.7068	sample dropped one weighting only	↓	246	

"A", "B", and "C" as defined in Section 12.0 of the SOP, Data Analysis and Calculations.

TDS Worksheet

Analyst: J. Curry
 Date: 5/25/2012
 Batch ID: BE22405
 Site Name: Dimock Residential Groundwater
 WO#: 1205011
 TDS

Sample	B		A		not reported		A		A		A		Reported		Reported		WT. 1	WT. 2	WT. 3	STD	%RSD
	Pan (g)	Res 1 (g)	D (g)	mg/L	Res 2 (g)	D (g)	mg/L	Res 3 (g)	D (g)	mg/L	Value	AVG/RPD	AVG								
1205011-01	79.9134	79.9132	-0.0002	-2	79.9135	0.0001	1	N/A	N/A	N/A			-2								
1205011-02	71.5544	71.5585	0.0041	41	71.5591	0.0047	47	N/A	N/A	N/A			41								
1205011-03	74.4238	74.4283	0.0045	45	74.4299	0.0061	61	N/A	N/A	N/A			45								
1205011-08	76.6330	76.6331	0.0001	1	76.6336	0.0006	6	N/A	N/A	N/A			1								
1205011-09	76.6705	76.6861	0.0156	156	76.6868	0.0163	163	N/A	N/A	N/A			156								
1205011-10	72.3576	72.3735	0.0159	159	72.3751	0.0175	175	N/A	N/A	N/A			159								
1205011-11	76.2042	76.2165	0.0123	123	76.2162	0.0120	120	N/A	N/A	N/A			123								
BE22405-BLK1	75.8564	75.8568	0.0004	4	75.8581	0.0017	17	N/A	N/A	N/A			4								
BE22405-DUP1	73.7248	73.7299	0.0051	51	73.7306	0.0058	58	N/A	N/A	N/A			51	AVG=46	RPD= 21.7						
BE22405-SRM1	79.6622	79.7088	0.0246	246	N/A*	N/A	N/A	N/A	N/A	N/A			246								

* Weighting dish was dropped when returning it to the oven for the second drying, one value was used to reported the result.



A Waters Company

Certificate of Analysis

Lot No. P199-506

WasteWatR™ Minerals

Catalog No. 506

Issue Date: October 18, 2011

Revision Date: Original

Certification

Parameter	Certified Value ¹ (mg/l)	Uncertainty ²	QC PALs™ ³ (mg/l)	PT PALs™ ⁴ (mg/l)
alkalinity as CaCO ₃	28.5	7.5%	26.0 - 31.0	23.6 - 34.6
chloride	80.1	1.0%	75.2 - 86.6	68.6 - 91.8
conductivity at 25°C (µmhos/cm)	420	0.9%	392 - 447	376 - 464
fluoride	0.955	1.0%	0.859 - 1.07	0.713 - 1.20
potassium	28.5	0.5%	24.9 - 30.8	23.5 - 33.9
sodium	64.1	0.9%	57.6 - 69.8	54.4 - 73.6
sulfate	32.5	2.8%	29.3 - 35.1	26.1 - 38.0
total dissolved solids at 180°C	250	0.9%	222 - 278	185 - 314
total solids at 105°C	257	0.9%	222 - 291	218 - 293

Analytical Verification

Parameter	Round Robin Data ⁵			NIST Traceability	
	Mean (mg/l)	Recovery (%)	n	SRM Number	Recovery (%)
alkalinity as CaCO ₃	28.5	100%	36	SRM 187e	99.3%
chloride	80.9	101%	56	SRM 3182	101%
conductivity at 25°C (µmhos/cm)	420	100%	67	SRM 999b	102%
fluoride	0.965	101%	32	SRM 3183	101%
potassium	27.9	97.8%	40	SRM 3141a	96.4%
sodium	63.7	99.4%	41	SRM 3152a	99.0%
sulfate	32.2	99.1%	42	SRM 3181	101%
total dissolved solids at 180°C	250	99.9%	46	SRM 999b	99.7%
total solids at 105°C	257	100%	24	SRM 999b	101%

Please see footnotes on back





A Waters Company

1. The **Certified Values** are the actual "made-to" concentrations confirmed by ERA analytical verification. The **Certified Values** for Total Dissolved Solids (TDS) and Conductivity are the mean reported concentrations for these analytes from ERA's proficiency testing study.
2. The stated **Uncertainty** is the total propagated uncertainty at the 95% confidence interval. The uncertainty is based on the preparation and internal analytical verification of the product by ERA, multiplied by a coverage factor which is equal to the Student t factor at a 95% confidence interval at n-1 degrees of freedom. The uncertainty applies to the product as supplied and does not take into account any required or optional dilution and/or preparations the laboratory may perform while using this product.
3. The **QC Performance Acceptance Limits (QC PALS™)** are based on actual historical data collected in ERA's Proficiency Testing program. The **QC PALS™** reflect any inherent biases in the methods used to establish the limits and closely approximate a 95% confidence interval of the performance that experienced laboratories should achieve using accepted environmental methods. Use the **QC PALS™** to realistically evaluate your performance against your peers.
4. The **PT Performance Acceptance Limits (PT PALS™)** are calculated using the regression equations and fixed acceptance criteria specified in the NELAC proficiency testing requirements. Use the **PT PALS™** when analyzing this QC standard alongside USEPA and NELAC compliant PT standards. Please note that many PT study acceptance limits are concentration dependent (some non-linearly) and, therefore, the acceptance limits of this QC standard and any PT standard may differ relative to their difference in concentrations.
5. The **Analytical Verification** data include the mean value, percent recovery and number of data points reported by the laboratories in our Proficiency Testing study compared to the Certified Values. In addition, where NIST Standard Reference Materials (SRMs) are available, each analyte has been analytically traced to the NIST SRM listed.

$$\text{Traceability Recovery (\%)} = [(\% \text{ recovery certified standard}) / (\% \text{ recovery NIST SRM})] * 100$$

The traceability data shown were compiled by analyzing the ERA standards or their associated stock solutions against the applicable NIST SRMs.

6. This standard **expires 12/2014**. The certified values are monitored and purchasers will be notified of any significant changes resulting in recertification or withdrawal of this certified reference material during the period of validity of this certificate.

If you have any questions or need technical assistance, please call ERA technical assistance at 1-800-372-0122 or email to info@eraqc.com.

Certifying Officer: XXXXXXXXXX

On-Demand Data Checklist For
Total Nitrogen AS N
Technical Review Checklist (TRC)
For Internal Use Only

Site Name: Dimock Residential Groundwater WO#: 1205011
Analyst: J. Curry Date given to Reviewer: 6/7/12
Matrix (circle): Solid / Aqueous / Other _____
Program (circle): Superfund / RCRA / WPD (NPDES) / SDWA / Other: OSWER / Emergency Response
Reference Method or Procedure used in Analysis: QuikChem Method 10-107-04-4-A based on EPA 353.2

This is a special request which falls outside OASQA's routine laboratory protocols. Therefore, these samples were analyzed and the quality control (QC) was evaluated based on the "On Demand" criteria. These protocols include all the QC checks as per routine analyses plus special verification of the performance of the analytical method at the reported quantitation limit/s. These protocols are specified in the EPA Region III OASQA Laboratory Quality Manual, current version. A written procedure or reference must be available for the method being performed and referenced in the narrative. If the method to be performed is unique, the procedures must be fully documented.

The signature below indicates the following:

- This data meets the needs of the customer according to the request.
- The analysis was performed as per the indicated Method, or exceptions documented.
- All documentation needed to recreate the analyses has been reviewed.
- Data Review status set to Peer Reviewed in Element.

Peer Reviewer signature  Date accepted 6/7/12

If any data for this case is stored with another case file, give Site Name and WO# _____

Peer Reviewer Completes Section Below:

General:

Raw data is identified with sample IDs, site name, WO#, analyst name, date of analysis.

YES	NO	N/A	Comments
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

All logbooks completed, reviewed and copies present in report? _____

<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
-------------------------------------	--------------------------	--------------------------	--

Copies of certificates present for standards? _____

<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
-------------------------------------	--------------------------	--------------------------	--

Quality Control:

Raw data present; including dilution factors, units, and corrections factors for solids?

<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
-------------------------------------	--------------------------	--------------------------	--

All requested samples reported & DQO's met? _____

<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
-------------------------------------	--------------------------	--------------------------	--

Were samples analyzed within the 28 day hold time? _____

<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
-------------------------------------	--------------------------	--------------------------	--

Were Total Nitrogen samples preserved with acid? _____

<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
-------------------------------------	--------------------------	--------------------------	--

Sample results within calibration range? _____

<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
-------------------------------------	--------------------------	--------------------------	--

Calibration Curve: Correlation Coefficient ≥ 0.995 ?

<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
-------------------------------------	--------------------------	--------------------------	--

Are points from the curve omitted following the instrument Calibration Evaluation Policy?

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
--------------------------	--------------------------	-------------------------------------	--

CCV: Recovery $\pm 10\%$ of corresponding CLM conc.?

☒ _____

BLK: < Reporting Limit?

☒ _____

Secondary Source (High) BS: Recovery 85 - 115%?

☒ _____

Secondary Source (Low) LCV/BS: Recovery 60 - 140%?

☒ _____

MS: Recovery 85 - 115%?

☒ _____

DUP: RPD $\leq 20\%$?

☒ _____

Calculations/Report:

At least 10% Calculations and transcriptions checked.

☒ _____

Element Draft Report reviewed.

☒ _____

Deviations and problems documented.

_____ ☒

Additional Comments by Peer Reviewer:

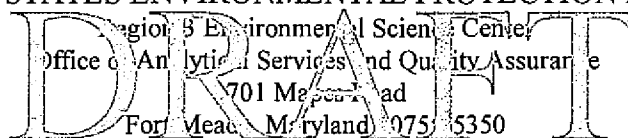
Analyst Ensures that the Data Case File is Complete and Accurate:

- ☒ Bench sheet or Work Order list
- ☒ Sample Prep logs
- ☒ Instrument run log
- ☒ Standard/Reagent Prep log

- ☒ Appropriate TV sheets / Certificates of Analysis
- ☒ Element Peer Review report
- ☒ Raw data
- ☒ Data status set to analyzed

Additional Comments by Analyst on data issues:

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY



Report Narrative

SVOAs Analysis Note:

All samples were extracted by EPA SW-846 Method 3520C followed by analysis using EPA SW-846 Method 8270D. Refer to notes in case file for additional information regarding the analysis.

For this project one additional compound is added to the SVOC analysis; 1-methylnaphthalene. This is a non-routine analysis. All current in-house quality control limits were met.

For all samples, quantitation limits for 2,4-dinitrophenol are rejected qualified "R" due to zero percent recovery in the low-spike quality control check (BS1) and less than 10% recovery in the mid-level spike quality control check (BS2). For all samples 4,6-dinitro-2-methylphenol and pentachlorophenol had less than 10% recovery in the low-spike quality control check (BS1) but within acceptance limits in the mid-level spike quality control check (BS2); therefore, quantitation limits are raised to the mid-level value. In the report, only 21 compounds are reported for blank spike quality control check samples. Quality control information about the additional spiked compounds is available in the case file.

Results for a limited number of compounds found in all samples have been qualified "B" because of contamination found in either the method blank, field blank, or equipment blank.

Glycols by HPLC/MS/MS Note:

Samples were analyzed for diethylene glycol (DiG) (CAS# 111-46-6), triethylene glycol (TriG) (112-27-6), tetraethylene glycol (TeG) (112-60-7), 2-butoxyethanol (2-Bu) (111-76-2) and 2-methoxyethanol (2-Me)(109-86-4) by HPLC/MS/MS (inst id: TQD-LCMSMS) on a Waters Atlantis dC18 3um 2.1 x 150mm column (s/n- 0141301481).

An HPLC/MS/MS method does not currently exist for these analytes. SOP R3QA239 is in preparation. ASTM D 7731-11 and EPA SW-846 Methods 8000C and 8321 were followed for method development and QA/QC limits where applicable. All applicable OASQA On Demand QA/QC protocols were followed. All QC were within criteria.

The aqueous samples were injected without extraction onto the HPLC/MS/MS system.

Refer to notes in the case file for additional information regarding the analysis.

Nitrite/Nitrate Analysis Note:

Samples were run as an 'On-Demand' analysis..

Total Nitrogen Analysis Note:

Samples were run as an 'On-Demand' analysis..



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 3 Environmental Science Center
Office of Analytical Services and Quality Assurance
701 Mapes Road
Fort Meade, Maryland 20755-5350



Site Name: Dimock Residential Groundwater

Project #: DAS R33989

ANALYTICAL REPORT FOR SAMPLES

Station ID	Laboratory ID	Matrix	Date Sampled	Date Received
FB22	1205011-01	Water	05/22/12 11:58	05/23/12 12:22
HW64	1205011-02	Drinking Water	05/22/12 11:10	05/23/12 12:22
HW64-P	1205011-03	Drinking Water	05/22/12 11:40	05/23/12 12:22
FB23	1205011-08	Water	05/23/12 13:25	05/24/12 11:53
HW63z	1205011-09	Drinking Water	05/23/12 13:10	05/24/12 11:53
HW63	1205011-10	Drinking Water	05/23/12 13:09	05/24/12 11:53
HW62	1205011-11	Drinking Water	05/22/12 15:59	05/24/12 11:53



Site Name: Dimock Residential Groundwater

Project #: DAS R33989

Classical Chemistry Parameters

Analyte	Result	Flags/ Qualifiers	Quantitation Limit	Units	Dilution	Prepared	Analyzed	Method/SOP#
Lab ID:	1205011-01							
Station ID:	FB22							
Sample Matrix:	Water							
Collected:	05/22/2012							
Total Nitrogen	U		1.00	mg/L	1	05/31/12	06/01/12 14:56	EPA 353.2

Classical Chemistry Parameters

Analyte	Result	Flags/ Qualifiers	Quantitation Limit	Units	Dilution	Prepared	Analyzed	Method/SOP#
Lab ID:	1205011-02							
Station ID:	HW64							
Sample Matrix:	Drinking Water							
Collected:	05/22/2012							
Total Nitrogen	U		1.00	mg/L	1	05/31/12	06/01/12 14:58	EPA 353.2

Classical Chemistry Parameters

Analyte	Result	Flags/ Qualifiers	Quantitation Limit	Units	Dilution	Prepared	Analyzed	Method/SOP#
Lab ID:	1205011-03							
Station ID:	HW64-P							
Sample Matrix:	Drinking Water							
Collected:	05/22/2012							
Total Nitrogen	U		1.00	mg/L	1	05/31/12	06/01/12 15:00	EPA 353.2



Site Name: Dimock Residential Groundwater

Project #: DAS R33989

Classical Chemistry Parameters

Analyte	Result	Flags/ Qualifiers	Quantitation Limit	Units	Dilution	Prepared	Analyzed	Method/SOP#
Lab ID:	1205011-08							
Station ID:	FB23							
Sample Matrix:	Water							
Collected:	05/23/2012							
Total Nitrogen	U		1.00	mg/L	1	05/31/12	06/01/12 15:03	EPA 353.2

Classical Chemistry Parameters

Analyte	Result	Flags/ Qualifiers	Quantitation Limit	Units	Dilution	Prepared	Analyzed	Method/SOP#
Lab ID:	1205011-09							
Station ID:	HW63z							
Sample Matrix:	Drinking Water							
Collected:	05/23/2012							
Total Nitrogen	U		1.00	mg/L	1	05/31/12	06/01/12 15:05	EPA 353.2

Classical Chemistry Parameters

Analyte	Result	Flags/ Qualifiers	Quantitation Limit	Units	Dilution	Prepared	Analyzed	Method/SOP#
Lab ID:	1205011-10							
Station ID:	HW63							
Sample Matrix:	Drinking Water							
Collected:	05/23/2012							
Total Nitrogen	U		1.00	mg/L	1	05/31/12	06/01/12 15:06	EPA 353.2



Site Name: Dimock Residential Groundwater

Project #: DAS R33989

Classical Chemistry Parameters

Analyte	Result	Flags/ Qualifiers	Quantitation Limit	Units	Dilution	Prepared	Analyzed	Method/SOP#
Lab ID:	1205011-11							
Station ID:	HW62							
Sample Matrix:	Drinking Water							
Collected:	05/22/2012							
Total Nitrogen	U		1.00	mg/L	1	05/31/12	06/01/12 15:07	EPA 353.2



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

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Site Name: Dimock Residential Groundwater

Project #: DAS R33989

QC Data
Classical Chemistry Parameters

Analyte	Result	Quantitation Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BE23102 - Nutrient Prep										
Blank (BE23102-BLK1)				Prepared: 05/31/12 11:10		Analyzed: 06/01/12 14:51				
Total Nitrogen	U	1.00	mg/L							
LCS (BE23102-BS1)				Prepared: 05/31/12 11:10		Analyzed: 06/01/12 14:53				
Total Nitrogen	7.00	1.00	mg/L	7.0000		100	85-115			
Duplicate (BE23102-DUP1)				Source: 1205011-02		Prepared: 05/31/12 11:10		Analyzed: 06/01/12 14:59		
Total Nitrogen	U	1.00	mg/L		U				20	
MRL Check (BE23102-MRL1)				Prepared: 05/31/12 11:10		Analyzed: 06/01/12 14:55				
Total Nitrogen	0.931400	1.00	mg/L	1.0000		93	60-140			
Matrix Spike (BE23102-MS1)				Source: 1205011-03		Prepared: 05/31/12 11:10		Analyzed: 06/01/12 15:02		
Total Nitrogen	4.87	1.00	mg/L	5.0000	U	97	85-115			



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Office of Analytical Services and Quality Assurance
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Site Name: Dimock Residential Groundwater

Project #: DAS R33989

Notes and Definitions

%REC Percent Recovery

RPD Relative Percent Difference

U Analyte included in the analysis, but not detected at or above the quantitation limit.

Quantitation Limit: The lowest concentration of an analyte that can be reliably measured within specified limits of precision and accuracy for a specific laboratory analytical method and that takes into account analytical adjustments made during sample preparation and analysis.

REPORTING PROTOCOL FOR SOLID SAMPLE RESULTS: Percent Solids (percent dry wt at 105 degrees C) determinations are routinely performed for most organic and inorganic analyses. Consequently, these samples are analyzed wet and converted to a dry weight result for reporting purposes. If metals and mercury analyses are requested, they are routinely prepared for analyses by an initial drying at 60 degrees C, homogenized prior to digestion, and are analyzed and reported on a dry weight basis. Oil-type samples are analyzed and reported on a wet weight basis for all analyses because of the nature of the sample matrix. Any exceptions to this protocol will be noted in the narrative.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 3 Environmental Science Center
Office of Analytical Services and Quality Assurance
701 Mapes Road
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Items for Project Manager Review

LabNumber	Analysis	Analyte	Exception
	Total Nitrogen by mod. EPA : (Water)		Special Units: (mg/L)
1205011-01	Total Nitrogen by mod. EPA :		Status is Analyzed
1205011-02	Total Nitrogen by mod. EPA :		Status is Analyzed
1205011-03	Total Nitrogen by mod. EPA :		Status is Analyzed
1205011-08	Total Nitrogen by mod. EPA :		Status is Analyzed
1205011-09	Total Nitrogen by mod. EPA :		Status is Analyzed
1205011-10	Total Nitrogen by mod. EPA :		Status is Analyzed
1205011-11	Total Nitrogen by mod. EPA :		Status is Analyzed

Original Run Filename: OM_6-1-2012_02-43-09AM.OMN created 6/1/2012 2:43:09 AM
 Original Run Author's Signature: [Administrator]
 Current Run Filename: OM_6-1-2012_02-43-09AM.OMN last modified 6/1/2012 3:11:58 AM
 Current Run Author's Signature: [Administrator]
 Description: METHOD# 10-107-04-4-A

Wo 1205011 Dimock Residential Groundwater

Sample	Rep.	Cup No.	Channel 4			Detection Time	ADF	MDF
			Total Nitrogen	Conc. (mg N/L)	Area (Vs)	Height (V)		
CLM 1	1	49	10.0000	23.6646	2.6729	6/1/2012@2:44:13 AM		
CLM 2	1	50	7.0000	17.8280	2.0267	6/1/2012@2:45:37 AM		
CLM 3	1	51	5.0000	12.2813	1.4027	6/1/2012@2:47:00 AM		
CLM 4	1	52	3.0000	7.2204	0.8194	6/1/2012@2:48:24 AM		
CLM 5	1	53	1.0000	3.2497	0.3686	6/1/2012@2:49:47 AM		
BE23102-BLK1	1	54	0.2239	0.1625	0.0179	6/1/2012@2:51:10 AM		
Calibration:			Table/Fig. 1					
COLUMN CHK	1	1	2.8874	7.4396	0.8488	6/1/2012@2:52:34 AM		
BE23102-BS1	1	2	6.9971	17.0521	1.9085	6/1/2012@2:53:58 AM		
BE23102-MRL1	1	3	0.9314	2.8647	0.3216	6/1/2012@2:55:21 AM		
1205011-01	1	4	0.1292	0.3839	0.0425	6/1/2012@2:56:45 AM		
1205011-02	1	5	0.0250	0.7447	0.0836	6/1/2012@2:58:08 AM		
BE23102-DUP1	1	6	0.0270	0.7492	0.0846	6/1/2012@2:59:31 AM		
1205011-03	1	7	0.0519	0.8075	0.0887	6/1/2012@3:00:54 AM		
BE23102-MS1	1	8	4.8728	12.0830	1.3715	6/1/2012@3:02:16 AM		
Spike Level:			100.0000	44.7/12	5.0			
1205011-08	1	9	0.1523	0.3297	0.0365	6/1/2012@3:03:39 AM		
1205011-09	1	10	0.0637	0.8338	0.0938	6/1/2012@3:05:02 AM		
1205011-10	1	11	0.0542	0.8129	0.0917	6/1/2012@3:06:24 AM		
1205011-11	1	12	0.5390	1.9469	0.2204	6/1/2012@3:07:46 AM		
BE23102-CCV1	1	52	2.6952	6.9901	0.7960	6/1/2012@3:09:09 AM		
Known Conc:			5.0000	44.7/12	3.0			
BE23102-BLK2	1	54	-0.2239	0.1624	0.0173	6/1/2012@3:10:33 AM		

TV = 3.0

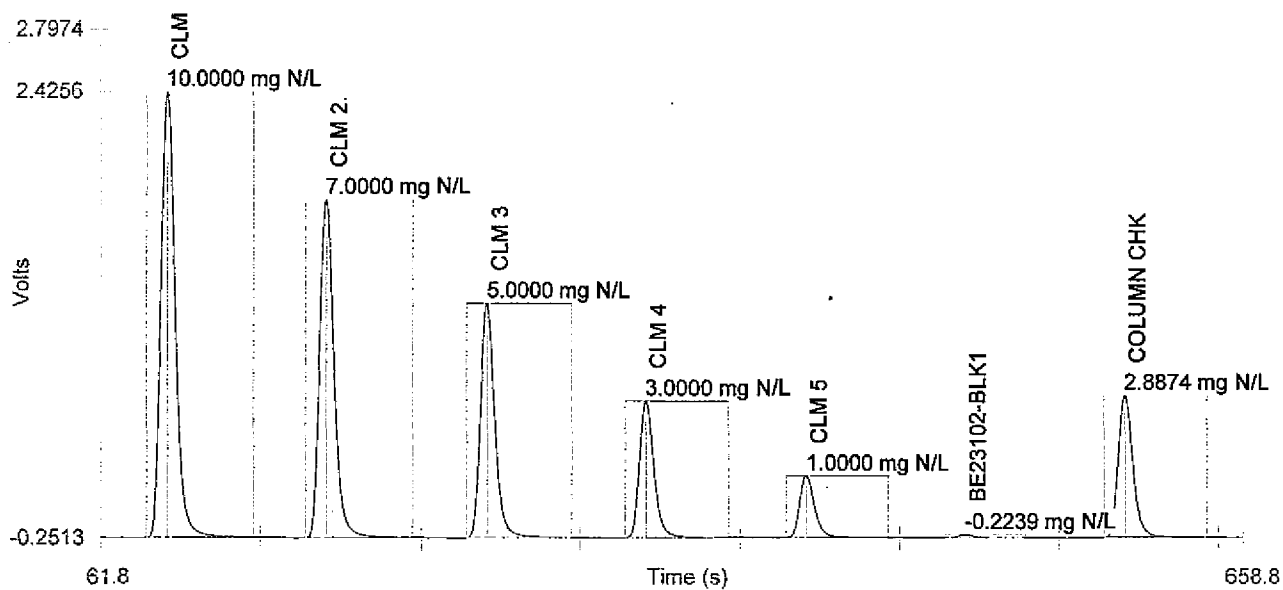
Analyte Properties Table for OM_6-1-2012_02-43-09AM.OMN

Property	Channel 4
Concentration Units	mg N/L
Calibration Fit Type	First Order
Clear Calibration	True
Force Through Zero	False
Calibration Weighting	None
Auto Dilution Trigger	False
% of High Standard	110
Quik Chem Method	10-107-04-1-C
Chemistry	Direct/Bipolar
Calibration by Height	False
Inject to Peak Start	26
Peak Base Width	63

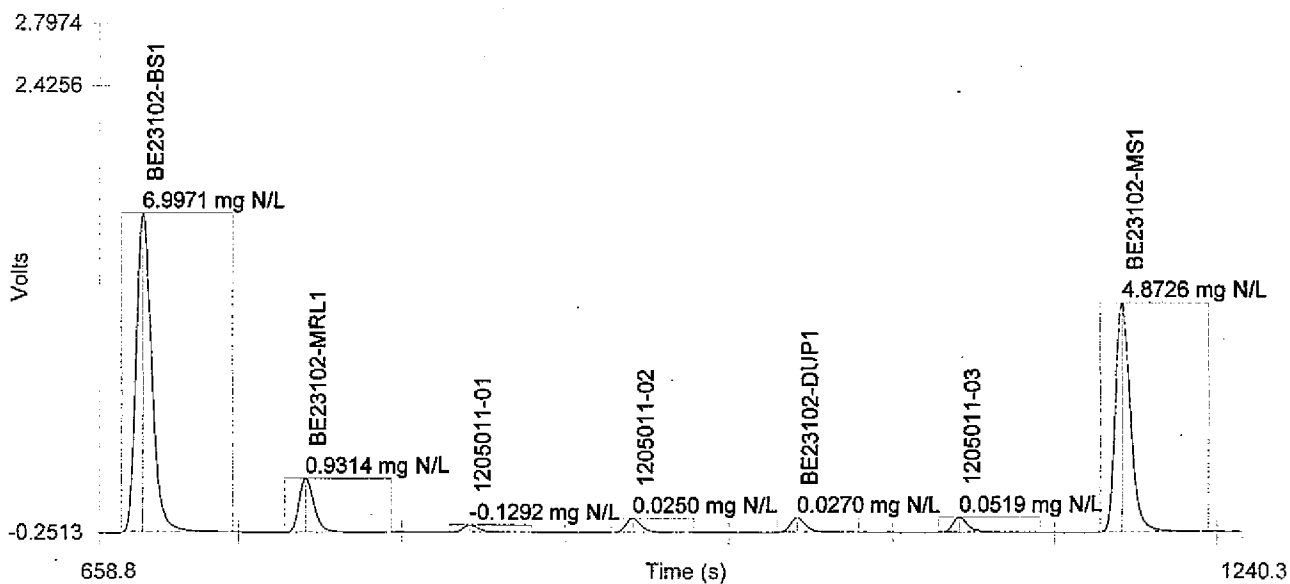
pk 6/7/12
-1-

W01205011 Dimock Residential Groundwater

Channel 4: Set 1 of 3



Channel 4: Set 2 of 3



pk 6/7/12
-2-

10/1/2017

10/1/2017 10:10:10 AM

10/1/2017

10/1/2017

Channel 4: Set 3 of 3

WD 1205011 Dimock Residential Groundwater

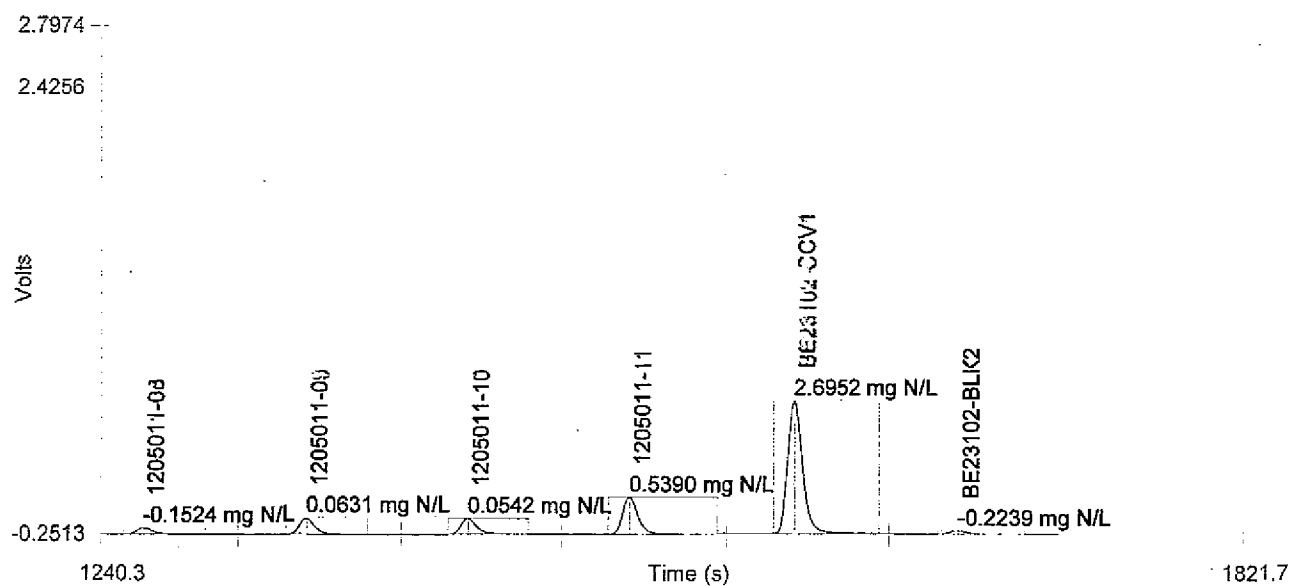
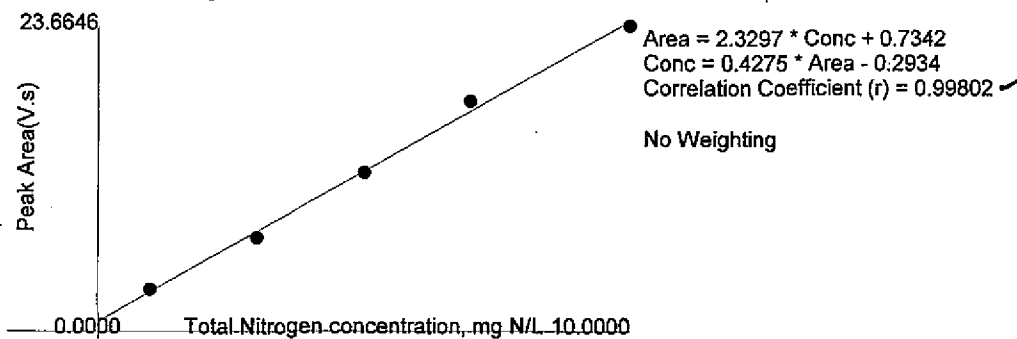


Table 1: Total Nitrogen

	Conc. (mg N/L)	Rep	Peak Area (Volt-s)	Peak Height (Volts)	% Residual	Detection Date	Detection Time
1	10.0000	1	23.6646	2.6729	1.5	6/1/2012	2:45:39 AM
2	7.0000	1	17.8280	2.0267	-4.6	6/1/2012	2:47:02 AM
3	5.0000	1	12.2813	1.4027	0.8	6/1/2012	2:48:26 AM
4	3.0000	1	7.2204	0.8194	6.5	6/1/2012	2:49:49 AM
5	1.0000	1	3.2497	0.3686	-6.1	6/1/2012	2:51:13 AM

Figure 1: Total Nitrogen



6/1/12
-3-

1. The first part of the document is a list of the names of the people who were present at the meeting.

2. The second part of the document is a list of the topics that were discussed during the meeting.

3. The third part of the document is a list of the actions that were taken during the meeting.

4. The fourth part of the document is a list of the decisions that were made during the meeting.

5. The fifth part of the document is a list of the conclusions that were reached during the meeting.

6. The sixth part of the document is a list of the recommendations that were made during the meeting.

7. The seventh part of the document is a list of the next steps that need to be taken.

8. The eighth part of the document is a list of the people who are responsible for implementing the next steps.

9. The ninth part of the document is a list of the dates when the next steps are to be completed.

10. The tenth part of the document is a list of the people who are responsible for monitoring the progress of the next steps.

11. The eleventh part of the document is a list of the people who are responsible for reporting on the progress of the next steps.

12. The twelfth part of the document is a list of the people who are responsible for evaluating the results of the next steps.

13. The thirteenth part of the document is a list of the people who are responsible for implementing the recommendations.

14. The fourteenth part of the document is a list of the people who are responsible for monitoring the progress of the recommendations.

15. The fifteenth part of the document is a list of the people who are responsible for reporting on the progress of the recommendations.

16. The sixteenth part of the document is a list of the people who are responsible for evaluating the results of the recommendations.

17. The seventeenth part of the document is a list of the people who are responsible for implementing the conclusions.

18. The eighteenth part of the document is a list of the people who are responsible for monitoring the progress of the conclusions.

19. The nineteenth part of the document is a list of the people who are responsible for reporting on the progress of the conclusions.

20. The twentieth part of the document is a list of the people who are responsible for evaluating the results of the conclusions.

21. The twenty-first part of the document is a list of the people who are responsible for implementing the recommendations.

EPA Region 3 - OASQA - NUTRIENTS SAMPLE PREPARATION LOG

BE23102

bch_Nutrients.rpt

Project: DAS R33989
Work Order No: 1205011
Site Name: Dimock Residential Groundwater
Analysis: Total Nitrogen by mod. EPA 353.2 FIA.
Matrix: Water

Location: EPA #3 Shelf 8B
Client: OSWER - Emergency Response
Account#: 2012T03N303DC6A3TARS00

Bench Sheet Prepared Date: 05/31/12 11:10

Analyst: J. Curry
DI Water Criteria: 18 (M Ω -cm) Y / N

Sample Prep date: 5/31/12 METHOD/SOP: EPA 353.2Pipet Log#: SNB 49Reagent Purity correct: Y / NBalance Log: SNB 60Temperature Log: SNB 47

Comments from WO: _____

Certificate of Analysis Log#: SNB 45

Date/Time of Analysis: <u>6/1/12 14:44</u>	CCV Std #: <u>1200335</u>	Autoclave # Temp/Time in: <u>121.9 / 1607</u>	Autoclave # Temp/Time out: <u>122.5 / 1711</u>
Standard/Reagent Prep Log #: PNB 145	Vol Used (mL): <u>3.0 mL into 100 mL DI</u>	Hot Block # Temp/Time in: <u>N/A</u>	Hot Block # Temp/Time out: <u>N/A</u>
Maintenance Log#: SNB 227	Samples < 6°C: <u>Y</u> / N		

EPA Region 3 - OASQA - NUTRIENTS SAMPLE PREPARATION LOG

BE23102

bch_Nutrients.rpt

Surrogate used:

LabNumber	Cont ID	Sample Type	Sample filtered (y or n)	Initial (mL)	Final (mL)	pH < 2	pH Adjusted	Spike1	Spike1 Amount µl	SourceID	ExtractionComments
1205011-01	C	SAM	No	50	50	yes	Instrument Adjusted				11 Drinking Water
1205011-02	C	SAM		50	50						11 Drinking Water
1205011-03	C	SAM		50	50						11 Drinking Water
1205011-08	C	SAM		50	50						11 Drinking Water
1205011-09	C	SAM		50	50						11 Drinking Water
1205011-10	C	SAM		50	50						11 Drinking Water
1205011-11	C	SAM		50	50						11 Drinking Water
BE23102-BLK1				50	50					-	
BE23102-BS1				100	100			1200336	7000	-	
BE23102-DUP1				50	50					1205011-02	
BE23102-MRL1				100	100			1200336	1000	-	
BE23102-MS1				50	50			1200335	2500	1205011-03	

Analyst: J. Curry Date: 5/31/12 SOP Number: Quikchem 10-107-04-4-A

1000 mg/L Stock Standard Element ID: ERA <u>1100618</u> SPEX <u>1100619</u>								
Stock Solution	Element ID	Date Prepared	Expiration Date	Vendor	Stock Conc	Amount Used	Final Volume	Final Conc.
NO ₃ -N	<u>1200335</u>	<u>5/31/12</u>	<u>6/13/12</u>	ERA	1000 mg/L	10.0 mL	100 mL	100 mg/L
NO ₃ -N	<u>1200336</u>	<u>5/31/12</u>	<u>6/13/12</u>	SPEX	1000 mg/L	10.0 mL	100 mL	100 mg/L

* Certificates of Analysis Logbook#: SNB225Balance log book#: SNB60

Element ID of Stock Solution used <u>1200335</u>	Stock Conc.	Amount used (mL)	Final Volume	Final Concentration in mg NO ₃ -N/L
CLM 1	100 mg/L	<u>10.0</u>	100 mL	<u>10.0</u>
CLM 2	100 mg/L	<u>7.0</u>	100 mL	<u>7.0</u>
CLM 3	100 mg/L	<u>5.0</u>	100 mL	<u>5.0</u>
CLM 4	100 mg/L	<u>3.0</u>	100 mL	<u>3.0</u>
CLM 5	100 mg/L	<u>1.0</u>	100 mL	<u>1.0</u>
CLM 6	100 mg/L	<u>N/A</u>	100 mL	<u>N/A</u>

Reagent purity checked: YES or NoDI Water 18.2 Ω : YES or No

Reagents (Refer to method for preparation procedure information.)		Final Vol. (mL)	Date Made	Date Expires	CHIM Bar Code
Reagent #1	Sodium Hydroxide (NaOH) / 150 g	250	<u>N/A</u>		<u>→</u>
Reagent #2	Ammonium Chloride (NH ₄ Cl) / 85.0 g	1000	<u>5/15/12</u>	<u>5/15/13</u>	<u>5619</u>
	Disodium Ethylenediamine Tetraacetic Acid Dihydrate (Na ₂ EDTA·2H ₂ O) / 1.0 g				<u>5685</u>
Reagent #3	Phosphoric Acid (H ₃ PO ₄) / 100 mL	1000	<u>5/15/12</u>	<u>6/15/12</u>	<u>5693</u>
	Sulfanilamide (C ₆ H ₈ N ₂ O ₂ S, 4-(NH ₂)C ₆ H ₄ SO ₂ NH ₂) / 40.0g				<u>13903</u>
	N-(1-naphthyl)ethylenediamine dihydrochloride (NED) / 1.0 g				<u>5670</u>
Reagent #4	Potassium Persulfate (K ₂ S ₂ O ₈) / 40.3160	1000	<u>5/31/12</u>	<u>5/31/13</u>	<u>6059</u>
	Boric Acid (H ₃ BO ₃) / 18.4971				<u>6036</u>
	Sodium Hydroxide (NaOH) / 9g.1743				<u>6020</u>

Comments: 620 1205011



A Waters Company

Certificate of Analysis

PRODUCT:	1000 mg/L Nitrate as N ($\text{NO}_3\text{-N}$)
CATALOG NUMBER:	052 -125 mL; 991 - 500 mL
LOT NUMBER:	180111
ISSUE DATE:	January 31, 2011
REVISION DATE:	Original
STARTING MATERIAL:	Potassium Nitrate (KNO_3)
CERTIFIED CONCENTRATION ¹ :	1000 mg/L
UNCERTAINTY ² :	0.4%
MATRIX:	18 megohm deionized water
DENSITY:	1.0032 \pm 0.0008 g/mL at 21.5°C and 776 mm Hg
TRACEABILITY ³ :	97.4%
NIST/SRM:	3185 Nitrate
VERIFICATION METHOD:	Ion Chromatography
STORAGE:	Store at 20-25°C

1. The **Certified Concentration** is the actual made-to concentration confirmed by ERA analytical verification.
2. The stated **Uncertainty** is the total propagated uncertainty at the 95% confidence interval. The uncertainty is based on the preparation of the product and includes uncertainty related to the starting material used and the volumetric and gravimetric measurements made. The method of calculating uncertainty is taken from the ISO Guide to the Expression of Uncertainty in Measurement (current version). The uncertainty applies to the product as supplied and does not take into account any required or optional dilutions and/or preparations the laboratory may perform while using this product.
3. Traceability Recovery = ((% Recovery certified standard)/(% Recovery NIST SRM))*100.

The traceability data shown were compiled by analyzing the ERA standards or their associated stock solutions against the applicable NIST SRMs.

This standard **expires 1/2013**. The certified values are monitored and purchasers will be notified of any significant changes resulting in recertification or withdrawal of this certified reference material during the period of validity of this certificate.

This product is intended to be used as either a calibration standard or a quality control check of the entire analytical process for the analytes/matrix included in the standard.

If you have any questions or need technical assistance, please call ERA technical assistance at 1-800-372-0122 or email to info@eraqc.com

Certifying Officer: XXXXXXXXXX

SPEXertificate®

Certificate of Reference Material



Reference Materials Producer
CERT #2495.01
Chemical Testing
CERT #2495.02

Catalog Number: AS-NO3N9-2X/2Y

Lot No. 2-78NO3N-2

Description: 1000 mg/L Nitrate- Nitrogen

Matrix: H₂O

This Ion Chromatography Certified Reference Material, CRM, is intended primarily for use as a calibration standard or quality control standard for ion chromatography instrumentation. It can be employed in USEPA, ASTM and other methods relevant to the certified properties listed below.

Certified Value: 1005 mg/L

Uncertainty Associated with Measurement: ±3 mg/L

Certified Value is Traceable to: 3185*

* - indicates NIST SRM † - indicates SPEX CertiPrep CRM (when NIST SRM is not available) ‡ - prepared gravimetrically

The CRM is prepared gravimetrically using high purity Sodium Nitrate, Lot# 04091C. The certified value listed is the average of values obtained by classical wet assay and ion chromatography analysis.

Refer to side 2 for details of measurement uncertainties.

Classical Wet Assay: 1004 mg/L

Method: Precipitate using Nitron Acetate. Filter, dry and weigh as C₂₀H₁₆N₄HNO₃

Instrumental Analysis by Ion Chromatography: 1005 mg/L

Uncertified Properties

Trace Ionic Impurities in the Actual Solution via IC Analysis:

Element	mg/L	Element	mg/L
Br ⁻	<0.2	NO ₂ ⁻	<0.2
Cl ⁻	<0.5	PO ₄ ⁻³	<0.3
F ⁻	<0.03	SO ₄ ⁻²	<0.2

Balances are calibrated regularly with weight sets traceable to NIST #32856, #32857 and others. This CRM is guaranteed stable and accurate to +/- 0.5% of the certified value. This includes uncertainty components due to preparation, homogeneity by the most precise method, short term and long term stability as well as transpiration loss. This guarantee is valid for a period of one year from the date of certification only when the material is kept tightly closed and stored under ambient laboratory conditions.

Date of Certification:

MAR -- 2011

Certifying Officer:

Report of Certification

This Certified Reference Material (CRM) has been prepared and certified under an ISO 9001:2000, ISO 17025:2005, and ISO Guide 34:2000 quality system consistent with the following quality standards:

- Guide To The Expression Of Uncertainty In Measurement 1997
- EURACHEM/CITAC Guide: Quantifying Uncertainty in Analytical Measurement – Second Edition
- ASTM Guide D6362-98
- NIST Technical Note 1297
- ISO 17025:2005: General Requirements for the Competence of Testing and Calibration Laboratories – Certified by A2LA
- ISO Guide 31:2000: Reference Materials – Contents of Certificates and Labels
- ISO Guide 34:2000: General Requirements for the Competence of Reference Material Producers – Certified by A2LA
- ILAC-G12-2000: Guidelines for the requirements for the competence of reference materials producers
- ISO/REMCO N280
- Compliant with 10CFR50, Appendix B as applied to Chemicals & Reagents (NRC)
- Compliant with 10CFR21, Reporting of Defects and Non-compliance (NRC)

Material Source:

All analytes and matrix materials are obtained and verified by SPEX CertiPrep from pre-qualified vendors as per ISO 9001:2000, ISO 17025:2005, and ISO Guide 34:2000 guidelines. Vendor identifications are proprietary, however sources of all materials used in the preparation and testing of SPEX CertiPrep CRMs are tracked and documented. For further assistance, please contact the Sales Support Department at crmsales@spexcsp.com.

Instructions for Use:

Primary usage of this CRM is in neat form or diluted serially with matrix of a purity at or greater than the purity of the original matrix solution. If dilution is required the diluent must be compatible with all certified analytes and contain stabilizers appropriate for the period of intended use. The CRM can also be used as a spike or with a spike, again with appropriate compatibility considerations. All solutions should be thoroughly mixed, by shaking, prior to use and never pipetted directly from the bottle. All surfaces that come in contact with the solution must be thoroughly cleaned and leached prior to use. Dilutions should be performed only with Class A volumetric glassware.

Method of Preparation:

Clean laboratory procedures and techniques have been used throughout the preparation. All materials, equipment, analytical instrumentation and personnel have been qualified prior to use. The highest purity acids applicable, 18 megohm, double deionized water, acid-leached triple-rinsed bottles (where appropriate), and Class A/calibrated volumetrics have been used in all preparations.

Homogeneity:

The homogeneity of the CRM has been confirmed by procedures consistent with ISO 17025:2005, ISO Guide 34:2000, and ASTM D6362-98 Appendix X2. Random, replicate samples of the final, packaged material have been analyzed to prove homogeneity in accordance with our internal procedure 4600-HOMOGEN-1A. This is consistent with the intended use of the CRM.

Statistical Estimator and Confidence Limits:

The certified value 'X' listed on the reverse of this document is at the 95% level of confidence and can be expressed as:

- $X = x \pm U$ where x = measured value, U = expanded uncertainty
 - $U = k u_C$ where $k=2$ is the coverage factor at the 95% confidence level
- u_C is obtained by combining the individual element standard uncertainty components u_i , and $u_C = \sqrt{\sum u_i^2}$

Certification Traveler Report:

All certified values reported were derived from the Traveler Report (SPEX CertiPrep's traceability documentation) identified by the lot number of this CRM. For further assistance, please contact the Sales Support Department at crmsales@spexcsp.com.

Legal Notice:

SPEX CertiPrep reference materials are not for any cosmetic, drug or household application and are to be used only by qualified individuals who are trained in appropriate procedures. No claims against SPEX CertiPrep, Inc. of any kind whatsoever, whether based on breach of warranty, alleged negligence, or otherwise, with respect to this Reference Material shall be greater than the purchase price. In no event shall SPEX CertiPrep, Inc. be liable for any loss of profits or any incidental, special, or consequential damages.

SPEX CertiPrep.

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Total Suspended Solids (TSS) Technical Review Checklist (TRC) Checklist

For Internal Use Only
SOP R3-QA106 -110311

Site Name: Dimock Residential Groundwater WO#: 1205011
Analyst: J. Curry Date given to Reviewer: 6/7/12
Matrix (circle): Solid / Aqueous / Other _____
Program (circle): Superfund / RCRA / WPD (NPDES) / SDWA / Other: OSWER - Emergency Response

The signature below indicates the following:

- This data meets the needs of the customer according to the request.
- The analysis was performed as per the SOP, or exceptions documented.
- All documentation needed to recreate the analyses has been reviewed.
- Data Review status set to Peer Reviewed in Element.

Peer Reviewer signature [Signature] Date accepted 6/7/12

If any data for this case is stored with another case file, give Site Name and WO# _____

Peer Reviewer Completes Section Below:

General:

	YES	NO	N/A	Comments
Raw data is identified with sample IDs, site name, WO#, analyst name, date of analysis.	<input checked="" type="checkbox"/>			
Is the NQL appropriate for the project DQOs? (<10 for 100 mls, <4 for 250 mls)	<input checked="" type="checkbox"/>			
Are the sample #s clearly identified and matched to the assignment sheet?	<input checked="" type="checkbox"/>			
Are technical holding times met? (7 Days from collection)	<input checked="" type="checkbox"/>			

Quality Control:

Was the analytical balance calibrated to bracket reported results?	<input checked="" type="checkbox"/>			
Are balance verifications acceptable?	<input checked="" type="checkbox"/>			
Were class one weights used in analysis?				
Was oven calibrated to 104° C? (± 2° C)	<input checked="" type="checkbox"/>			
Are all appropriate measures of precision and accuracy included at correct frequency and meets the required limits? (see limits below)	<input checked="" type="checkbox"/>			

Calculations/Report:

Calculations and transcriptions checked - at least 10% calculations checked.	<input checked="" type="checkbox"/>			
Element Draft Report reviewed.	<input checked="" type="checkbox"/>			
Deviations and problems documented.			<input checked="" type="checkbox"/>	
Is the raw data package complete, labeled, and legible with date and analyst signature?	<input checked="" type="checkbox"/>			
Are qualifier codes correctly applied, outliers flagged and corrective actions documented?			<input checked="" type="checkbox"/>	
Are sample preparation steps described with sufficient detail to recalculate data?	<input checked="" type="checkbox"/>			
Are the appropriate significant figures reported?	<input checked="" type="checkbox"/>			
Is the report free of typographical and grammatical errors and does it follow the accepted format?	<input checked="" type="checkbox"/>			

Analyte	LCM % Recovery Limits	LD2 Precision Limits	LRB Method Blank	CLC	Avg of 3 weighings (if needed)
TSS	Use vendor limits	Abs. Difference: UWL = 15 mg/L UCL = 20 mg/L RPD < 20% 1 per 10 samples	Fails if \geq NQL and > 1/10th of sample	1 per 10 samples and at end	RSD \leq 25%

Additional Comments by Peer Reviewer:

Analyst Ensures that the Data Case File is Complete and Accurate as per SOP R3QA-066:

- | | |
|--|--|
| <input checked="" type="checkbox"/> Bench sheet or Work Order list | <input checked="" type="checkbox"/> Appropriate TV sheets / Certificates of Analysis |
| <input checked="" type="checkbox"/> Sample Prep logs | <input checked="" type="checkbox"/> Element Peer Review report |
| <input checked="" type="checkbox"/> Instrument run log <i>pk 6/7/12</i> | <input checked="" type="checkbox"/> Raw data |
| <input checked="" type="checkbox"/> Standard/Reagent Prep log <i>pk 6/7/12</i> | <input checked="" type="checkbox"/> Data status set to analyzed |

Additional Comments by Analyst on data issues:



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 3 Environmental Science Center
Office of Analytical Services and Quality Assurance
701 Maes Road
Fort Meade, Maryland 20751-5350



Report Narrative

SVOAs Analysis Note:

All samples were extracted by EPA SW-846 Method 3520C followed by analysis using EPA SW-846 Method 8270D. Refer to notes in case file for additional information regarding the analysis.

For this project one additional compound is added to the SVOC analysis; 1-methylnaphthalene. This is a non-routine analysis. All current in-house quality control limits were met.

For all samples, quantitation limits for 2,4-dinitrophenol are rejected qualified "R" due to zero percent recovery in the low-spike quality control check (BS1) and less than 10% recovery in the mid-level spike quality control check (BS2). For all samples 4,6-dinitro-2-methylphenol and pentachlorophenol had less than 10% recovery in the low-spike quality control check (BS1) but within acceptance limits in the mid-level spike quality control check (BS2); therefore, quantitation limits are raised to the mid-level value. In the report, only 21 compounds are reported for blank spike quality control check samples. Quality control information about the additional spiked compounds is available in the case file.

Results for a limited number of compounds found in all samples have been qualified "B" because of contamination found in either the method blank, field blank, or equipment blank.

Glycols by HPLC/MS/MS Note:

Samples were analyzed for diethylene glycol (DiG) (CAS# 111-46-6), triethylene glycol (TriG) (112-27-6), tetraethylene glycol (TeG) (112-60-7), 2-butoxyethanol (2-Bu) (111-76-2) and 2-methoxyethanol (2-Me) (109-86-4) by HPLC/MS/MS (inst id: TQD-LCMSMS) on a Waters Atlantis dC18 3um 2.1 x 150mm column (s/n: 0141301481).

An HPLC/MS/MS method does not currently exist for these analytes. SOP R3QA239 is in preparation. ASTM D 7731-11 and EPA SW-846 Methods 8000C and 8321 were followed for method development and QA/QC limits where applicable. All applicable OASQA On Demand QA/QC protocols were followed. All QC were within criteria.

The aqueous samples were injected without extraction onto the HPLC/MS/MS system.

Refer to notes in the case file for additional information regarding the analysis.

Nitrite/Nitrate Analysis Note:

Samples were run as an 'On-Demand' analysis..

Total Nitrogen Analysis Note:

Samples were run as an 'On-Demand' analysis..



Site Name: Dimock Residential Groundwater

Project #: DAS R33989

ANALYTICAL REPORT FOR SAMPLES

Station ID	Laboratory ID	Matrix	Date Sampled	Date Received
FB22	1205011-01	Water	05/22/12 11:58	05/23/12 12:22
HW64	1205011-02	Drinking Water	05/22/12 11:10	05/23/12 12:22
HW64-P	1205011-03	Drinking Water	05/22/12 11:40	05/23/12 12:22
FB23	1205011-08	Water	05/23/12 13:25	05/24/12 11:53
HW63z	1205011-09	Drinking Water	05/23/12 13:10	05/24/12 11:53
HW63	1205011-10	Drinking Water	05/23/12 13:09	05/24/12 11:53
HW62	1205011-11	Drinking Water	05/22/12 15:59	05/24/12 11:53



Site Name: Dimock Residential Groundwater

Project #: DAS R33989

Physical Parameters

Analyte	Result	Flags/ Qualifiers	Quantitation Limit	Units	Dilution	Prepared	Analyzed	Method/SOP#
Lab ID:	1205011-01							
Station ID:	FB22							
Sample Matrix:	Water							
Collected:	05/22/2012							
Total Suspended Solids	U		10	mg/L	1	05/24/12	05/25/12 10:00	SM2540D/R3QA106

Physical Parameters

Analyte	Result	Flags/ Qualifiers	Quantitation Limit	Units	Dilution	Prepared	Analyzed	Method/SOP#
Lab ID:	1205011-02							
Station ID:	HW64							
Sample Matrix:	Drinking Water							
Collected:	05/22/2012							
Total Suspended Solids	U		10	mg/L	1	05/24/12	05/25/12 10:00	SM2540D/R3QA106

Physical Parameters

Analyte	Result	Flags/ Qualifiers	Quantitation Limit	Units	Dilution	Prepared	Analyzed	Method/SOP#
Lab ID:	1205011-03							
Station ID:	HW64-P							
Sample Matrix:	Drinking Water							
Collected:	05/22/2012							
Total Suspended Solids	U		10	mg/L	1	05/24/12	05/25/12 10:00	SM2540D/R3QA106



Site Name: Dimock Residential Groundwater

Project #: DAS R33989

Physical Parameters

Analyte	Result	Flags/ Qualifiers	Quantitation Limit	Units	Dilution	Prepared	Analyzed	Method/SOP#
Lab ID:	1205011-08							
Station ID:	FB23							
Sample Matrix:	Water							
Collected:	05/23/2012							
Total Suspended Solids	U		10	mg/L	1	05/24/12	05/25/12 10:00	SM2540D/R3QA106

Physical Parameters

Analyte	Result	Flags/ Qualifiers	Quantitation Limit	Units	Dilution	Prepared	Analyzed	Method/SOP#
Lab ID:	1205011-09							
Station ID:	HW63z							
Sample Matrix:	Drinking Water							
Collected:	05/23/2012							
Total Suspended Solids	U		10	mg/L	1	05/24/12	05/25/12 10:00	SM2540D/R3QA106

Physical Parameters

Analyte	Result	Flags/ Qualifiers	Quantitation Limit	Units	Dilution	Prepared	Analyzed	Method/SOP#
Lab ID:	1205011-10							
Station ID:	HW63							
Sample Matrix:	Drinking Water							
Collected:	05/23/2012							
Total Suspended Solids	U		10	mg/L	1	05/24/12	05/25/12 10:00	SM2540D/R3QA106



Site Name: Dimock Residential Groundwater

Project #: DAS R33989

Physical Parameters

Analyte	Result	Flags/ Qualifiers	Quantitation Limit	Units	Dilution	Prepared	Analyzed	Method/SOP#
Lab ID:	1205011-11							
Station ID:	HW62							
Sample Matrix:	Drinking Water							
Collected:	05/22/2012							
Total Suspended Solids	U		10	mg/L	1	05/24/12	05/25/12 10:00	SM2540D/R3QA106



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 3 Environmental Science Center
Office of Analytical Services and Quality Assurance
701 Mapes Road
Fort Meade, Maryland 20755-5350



Site Name: Dimock Residential Groundwater

Project #: DAS R33989

QC Data
Physical Parameters

Analyte	Result	Quantitation Limit	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Notes
Batch BE22406 - TDS/TSS prep									
Blank (BE22406-BLK1)				Prepared: 05/24/12 12:37		Analyzed: 05/25/12 10:00			
Total Suspended Solids	U	10	mg/L						
Duplicate (BE22406-DUP1)				Source: 1205011-02		Prepared: 05/24/12 12:37		Analyzed: 05/25/12 10:00	
Total Suspended Solids	U	10	mg/L		0			20	
Reference (BE22406-SRM1)				Prepared: 05/24/12 12:37		Analyzed: 05/25/12 10:00			
Total Suspended Solids	43		mg/L	46.200		93	77-115		



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Site Name: Dimock Residential Groundwater

Project #: DAS R33989

Notes and Definitions

%REC Percent Recovery

RPD Relative Percent Difference

U Analyte included in the analysis, but not detected at or above the quantitation limit.

Quantitation Limit: The lowest concentration of an analyte that can be reliably measured within specified limits of precision and accuracy for a specific laboratory analytical method and that takes into account analytical adjustments made during sample preparation and analysis.

REPORTING PROTOCOL FOR SOLID SAMPLE RESULTS: Percent Solids (percent dry wt at 105 degrees C) determinations are routinely performed for most organic and inorganic analyses. Consequently, these samples are analyzed wet and converted to a dry weight result for reporting purposes. If metals and mercury analyses are requested, they are routinely prepared for analyses by an initial drying at 60 degrees C, homogenized prior to digestion, and are analyzed and reported on a dry weight basis. Oil-type samples are analyzed and reported on a wet weight basis for all analyses because of the nature of the sample matrix. Any exceptions to this protocol will be noted in the narrative.



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Region 3 Environmental Science Center
Office of Analytical Services and Quality Assurance
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Fort Meade, Maryland 20755-5350



Items for Project Manager Review

LabNumber	Analysis	Analyte	Exception
	Total Suspended Solids by 25 (Water)		Special Units: (mg/L)
1205011-01	Total Suspended Solids by 25		Status is Analyzed
1205011-02	Total Suspended Solids by 25		Status is Analyzed
1205011-03	Total Suspended Solids by 25		Status is Analyzed
1205011-08	Total Suspended Solids by 25		Status is Analyzed
1205011-09	Total Suspended Solids by 25		Status is Analyzed
1205011-10	Total Suspended Solids by 25		Status is Analyzed
1205011-11	Total Suspended Solids by 25		Status is Analyzed

EPA Region 3 - OASQA - TSS - SAMPLE PREPARATION/RUN LOG

BE22406 bch_TSS.rpt

Project: DAS R33989

Location: EPA #3 Shelf 8B

Work Order No: 1205011

Site Name: Dimock Residential Groundwater

Client: OSWER - Emergency Response

Analysis: Total Suspended Solids by 2540D

Account#: 2012T03N303DC6A3TARS00

Matrix: Water

Comments from WO:

Analyst: J. Curry

Date: 5/24/12

SOP: R3 QA-106

SRM: ^{ERA} ~~Q031-501~~ Lot#: Q031-507 TV: 46.2 Accept. Limits: 35.4-53.2 Cert. Log: SNB222DI H2O Source/ Log #: H105/SNB31 Resistivity: 18.2 Ω Oven ID: B23-2508 temp criteria: 104 \pm 1C

Oven Reference Thermometer S/N: 1992

Balance ID: P119650 Weight Set ID: 08954wt. criteria: \pm 2% for <1 g and \pm 0.5% for \geq 1 g

Prep Date: <u>5/24/12</u>	Pre-weight filters <u>yes</u>	Analyzed Date: <u>5/25/12</u>	Date: <u>N/A</u>	CLC (1 per 10 samples and at end)
Wgt 1 True <u>N/A</u>	Observed Wgt <u>N/A</u>	Wgt 1 True <u>0.1000</u>	Observed Wgt <u>0.0999</u>	CLC 1 True Wgt <u>2.0000</u> Observed Wgt <u>0.2000</u>
Wgt 2 True <u>↓</u>	Observed Wgt <u>↓</u>	Wgt 2 True <u>0.2000</u>	Observed Wgt <u>0.2001</u>	CLC 2 True Wgt <u>0.2000</u> Observed Wgt <u>0.2002</u>
Wgt 3 True <u>↓</u>	Observed Wgt <u>↓</u>	Wgt 3 True <u>0.5000</u>	Observed Wgt <u>0.5001</u>	CLC 3 True Wgt <u>0.2000</u> Observed Wgt <u>0.2001</u>

EPA Region 3 - OASQA - TSS - SAMPLE PREPARATION/RUN LOG

BE22406

bch_TSS.rpt

LabNumber ID	Cont ID	Sample Type	Pan ID	Filter Wt. (g) B	Sample Vol (mL) C	Pan/Filter wt. + Residue (g) A Date: 5/24/12/5/25/12 Time/temp In: 1550/105°C Time/temp Out: 1000/105°C	Pan/Filter wt. + Residue (g) A Date: 5/25/12 Time/temp In: 1210/105°C Time/temp Out: 1200/105°C	Pan/Filter wt. + Residue (g) A Date: N/A Time/temp In: Time/temp Out: ↓	Sample Result (mg/L) $\frac{(A-B) \times 1000 \times 1000}{C}$	SourceID
1205011-01	B	SAM	D8080	0.1179	100 ML	0.1179	0.1179	N/A	0	
1205011-02	B	SAM	D8081	0.1139		0.1141	0.1139		0	
1205011-03	B	SAM	D8082	0.1163		0.1163	0.1167		0	
1205011-08	B	SAM	D8083	0.1173		0.1175	0.1177		2	
1205011-09	B	SAM	D8084	0.1166		0.1167	0.1166		0	
1205011-10	B	SAM	D8085	0.1246		0.1247	0.1246		0	
1205011-11	B	SAM	D8086	0.1160		0.1160	0.1160		0	
BE22406-BLK1			D8087	0.1164		0.1164	0.1164		0	
BE22406-DUP1			D8088	0.1164		0.1174	0.1174		0	1205011-02
BE22406-SRM1			D8089	0.1212	↓	0.1260	0.1255	↓	43	

"A", "B", and "C" as defined in Section 12.0 of the SOP, Data Analysis and Calculations.

TSS Worksheet

Analyst: J. Curry

Date: 5/25/2012

Batch ID: BE22406

Site Name:

Dimock Residential Groundwater

WO#: 1205011

TSS

Sample	B	A			A			A			Reported	AVG/RPD
	Filter (g)	Res 1 (g)	Diff (g)	mg/L	Res 2 (g)	Diff (g)	mg/L	Res 3 (g)	Diff (g)	mg/L		
1205011-01	0.1179	0.1179	0.0000	0	0.1179	0.0000	0	#N/A	#N/A	#N/A	0	
1205011-02	0.1139	0.1141	0.0002	2	0.1139	0.0000	0	#N/A	#N/A	#N/A	0	
1205011-03	0.1163	0.1163	0.0000	0	0.1167	0.0004	4	#N/A	#N/A	#N/A	0	
1205011-08	0.1173	0.1175	0.0002	2	0.1177	0.0004	4	#N/A	#N/A	#N/A	2	
1205011-09	0.1166	0.1167	0.0001	1	0.1166	0.0000	0	#N/A	#N/A	#N/A	0	
1205011-10	0.1246	0.1247	0.0001	1	0.1246	0.0000	0	#N/A	#N/A	#N/A	0	
1205011-11	0.1160	0.1160	0.0000	0	0.1160	0.0000	0	#N/A	#N/A	#N/A	0	
BE22406-BLK1	0.1164	0.1164	0.0000	0	0.1164	0.0000	0	#N/A	#N/A	#N/A	0	
BE22406-DUP1	0.1174	0.1174	0.0000	0	0.1174	0.0000	0	#N/A	#N/A	#N/A	0	AVG= 0 RPD=0
BB22406-SRM1	0.1212	0.1260	0.0048	48	0.1255	0.0043	43	#N/A	#N/A	#N/A	43	



A Waters Company

Certificate of Analysis

Lot No. Q031-507

WasteWatR™ Hardness

Catalog No. 507

Issue Date: July 31, 2011

Revision Date: Original

Certification

Parameter	Certified Value ¹ (mg/l)	Uncertainty ²	QC PALS™ ³ (mg/l)	PT PALS™ ⁴ (mg/l)
total suspended solids	46.2	1.0%	38.3 - 50.3	35.4 - 53.2
calcium	29.7	1.0%	27.2 - 32.2	26.3 - 33.9
magnesium	12.1	1.0%	11.0 - 13.2	10.3 - 13.9
calcium hardness as CaCO ₃	74.2	1.0%	67.8 - 80.5	65.8 - 84.6
total hardness as CaCO ₃	124	1.0%	113 - 135	108 - 142

Analytical Verification

Parameter	Mean (mg/l)	Round Robin Data ⁵		NIST Traceability	
		Recovery (%)	n	SRM Number	Recovery (%)
total suspended solids	44.3	95.9%	1300	SRM not available	-
calcium	29.7	100%	72	SRM 3109a	102%
magnesium	12.1	100%	74	SRM 3131a	100%
calcium hardness as CaCO ₃	74.9	101%	45	SRM 3109a	102%
total hardness as CaCO ₃	124	100%	167	SRM 3109a/3131a	101%

Please see footnotes on back





A Waters Company

1. The **Certified Values** are the actual "made-to" concentrations confirmed by ERA analytical verification.
2. The stated **Uncertainty** is the total propagated uncertainty at the 95% confidence interval. The uncertainty is based on the preparation and internal analytical verification of the product by ERA, multiplied by a coverage factor which is equal to the Student t factor at a 95% confidence interval at n-1 degrees of freedom. The uncertainty applies to the product as supplied and does not take into account any required or optional dilution and/or preparations the laboratory may perform while using this product.
3. The **QC Performance Acceptance Limits (QC PALS™)** are based on actual historical data collected in ERA's Proficiency Testing program. The **QC PALS™** reflect any inherent biases in the methods used to establish the limits and closely approximate a 95% confidence interval of the performance that experienced laboratories should achieve using accepted environmental methods. Use the **QC PALS™** to realistically evaluate your performance against your peers.
4. The **PT Performance Acceptance Limits (PT PALS™)** are calculated using the regression equations and fixed acceptance criteria specified in the NELAC proficiency testing requirements. Use the **PT PALS™** when analyzing this QC standard alongside USEPA and NELAC compliant PT standards. Please note that many PT study acceptance limits are concentration dependent (some non-linearly) and, therefore, the acceptance limits of this QC standard and any PT standard may differ relative to their difference in concentrations.
5. The **Analytical Verification** data include the mean value, percent recovery and number of data points reported by the laboratories in our Proficiency Testing study compared to the Certified Values. In addition, where NIST Standard Reference Materials (SRMs) are available, each analyte has been analytically traced to the NIST SRM listed.

$$\text{Traceability Recovery (\%)} = [(\% \text{ recovery certified standard}) / (\% \text{ recovery NIST SRM})] * 100$$

The traceability data shown were compiled by analyzing the ERA standards or their associated stock solutions against the applicable NIST SRMs.

6. This standard **expires 7/2014**. The certified values are monitored and purchasers will be notified of any significant changes resulting in recertification or withdrawal of this certified reference material during the period of validity of this certificate.

If you have any questions or need technical assistance, please call ERA technical assistance at 1-800-372-0122 or email to info@eraqc.com.

Certifying Officer: XXXXXXXXXX